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TRANSACTIONS

OF THE

WOOLHOPE

NATURALISTS' FIELD CLUB.

[ESTABLISHED 1851.]

1902, 1903, 1904.

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TRANSACTIONS FOR THE YEARS 1902, 1903, 1904.

TABLE OF CONTENTS.

	PAGE
Table of Contents	iii.
Titles of Papers and Contributions	iii.
Illustrations. Diagrams, Tables, &c.	vi.
Officers for 1902, 1903, 1904	viii.
Presidents of the Club since its establishment in the winter months of 1851	x.
List of Honorary Members	xi.
Corresponding Societies	xi.
List of Ordinary Members	xii.
Members Elected in 1902, 1903, 1904	xviii.
Obituary	xx.
Rules	xxi.
Honorary Treasurer's Accounts for 1902—1903	xxiii.

1902.

	PAGE
For the Early Annual Meeting on Thursday, April 3rd, and the address of the retiring Jubilee President, Mr. Thomas Blashill, see the preceding volume of Transactions, 1900, 1901, to April, 1902 ... Pages 285 to	302
"Weather in Herefordshire during the Nineteenth Century," by H. Southall	2
"Rainfall at Ross, compared with Rainfall over the area of Watershed in Radnorshire, connected with the Birmingham Water Supply from Wales," by H. Southall	15
1st Field Meeting, Tuesday, May 27th, Woolhope Valley	19
"References to the Geology of Woolhope and its neighbourhood," by H. Cecil Moore	19
"References to Geological Illustrations," by H. Cecil Moore	27
"Suggestions for Routes," by H. Cecil Moore	27
Traces of Offa's Dyke (Clawdd Offa) from Ross to Hereford, by H. Cecil Moore	29
"Origin of Elevations on the Crust of the Earth," by Lord Avebury and Mallard Reade 31,	32
Mordiford—References to the Dragon of Mordiford	35
2nd Field Meeting, Friday, June 20th, Longhope, Huntley, and Mitcheldean	36
"Longmyndian Inlier at Huntley," by Chas. Callaway, D.Sc., F.G.S. ...	38
The "Deep Cutting" near Euroclydon, in the Parish of Hope Mansel, Herefordshire	41
3rd Field Meeting (Ladies' Day), Thursday, July 24th, Herefordshire Beacon and Eastnor Castle	43
"The Cuckoo in 1902," by Thomas Hutchinson	46
Foxglove with cup-shaped terminal blossom	49
4th Field Meeting, Thursday, August 28th, Bredon Hill	51
"The Results of Denudation as seen from Bredon Hill" by L. Richardson, F.G.S.	55
"Notes on the Geology of Bredon Hill," by L. Richardson, F.G.S.	62
"The Banbury Stone" on Bredon Hill, by L. Richardson, F.G.S.	68

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CONTENTS (*Continued*).

PAGE

"The Nutcracker (*Nucifraga Caryocatactes*) in Herefordshire" by James B. Pilley 70
The British Mycological Society at Hereford 75
Annual Winter Meeting, Monday, December 15th 82
Woolhope Club Library—Books received during 1902, by H. Cecil Moore ... 82
"Rainfall in Herefordshire in 1902," compiled by H. Cecil Moore ... 85, 86
Rainfall of 1902 compared with the average of 30 years, 1870 to 1899, by H. Cecil Moore 87
Rainfall at about 100 Stations in England and Wales, from 1880 to 1902, by H. Cecil Moore 89
Rainfall at about 100 Stations in the South, East, and West of England and Wales for 1903, by H. Cecil Moore 90
Meteorological Observations, 1902, by H. Cecil Moore 91
The Cornish Dustfall of January, 1902, by H. Cecil Moore 93

1903.

Early Annual Meeting, Tuesday, March 31st, 1903 95
Address of the Retiring President, Rev. Sir George H. Cornewall, Bart. ... 97
1st Field Meeting, Thursday, May 28th, Shucknall Hill, Westhide, Yarkhill, and Tarrington 107
"Tarrington Church," by Robert Clarke 110
"Westhide," by Rev. Preb. Wm. H. Lambert 113
"Shucknall Hill," by Rev. A. G. Jones 117
"Yarkhill," by Rev. A. J. Jones 120
2nd Field Meeting, Thursday, June 11th, Crickhowell 123
Inscribed Stones at Tretower, by H. Cecil Moore 127
Other Memorial Stones in the Neighbourhood, by H. Cecil Moore 129
"Tretower Castle, Court, and Church," by Rev. John Owen Evans 130
"Roman Roads and the Julian Road (so-called) in the Neighbourhood," by H. Cecil Moore 131
The Turpilian Stone, with Ogham inscription, in Glanusk Park, by H. Cecil Moore... 138
Turpilius, Turpilianus, by H. Cecil Moore 141
Short Reflections, by H. Cecil Moore... 144
"Occurrence of Rare Birds in Herefordshire," by James W. Lloyd 148
"Plants of Craig Cille," Breconshire, by Rev. A. Ley 149
"Ogham Inscriptions," by H. Cecil Moore 151
3rd Field Meeting (Ladies' Day), Thursday, July 23rd 154
"Watling Street in Herefordshire," by H. Cecil Moore 160
4th Field Meeting, Thursday, August 20th, Caerwent 166
"Points of Interest on the Route by railway from Grange Court Junction to Chepstow, and thence by main road to Caerwent," by James G. Wood, F.S.A. 166
Caerwent, Excavations at, by H. Cecil Moore 172
"The Mesozoic Rocks around Chepstow," by L. Richardson, F.G.S. 178
"Primary Roman Roads into Herefordshire and Monmouthshire, and the Crossings of the river Severn," by James G. Wood, F.S.A. 185
"The Ancient Harbours of Gwent Iscoed, or, South Monmouthshire, and the Roman Passage thence," by James G. Wood, F.S.A. 191
"The 'Anthony Post' at Avonmouth," by James G. Wood, F.S.A. 195
"The Place Name of Caerwent," by James G. Wood, F.S.A. 198
Annual Winter Meeting for the Election of President and Officers, Tuesday, December 15th 203
Woolhope Club Library, Books received during 1903, by H. Cecil Moore ... 206
Meteorology, "Our English Summers," by H. Southall 208
"Rainfall in Herefordshire in 1903, Temperature, and Dustfall," by H. Cecil Moore 212
"The Great Dustfall of February, 1903, by H. Cecil Moore 219
Table of Rainfall at 22 Stations in Herefordshire during 1903, by H. Cecil Moore ... ... to face page 220

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CONTENTS (*Continued*).

PAGE

1904.

Early Annual Meeting, Thursday, April 7th 221
Address of the retiring President, Mr. H. Southall, F.R.Met. Soc. 222
"Landslip in the Woolhope District on February 17th," by H. Cecil Moore 228
1st Field Meeting, Tuesday, May 31st, Lyonshall for Offa's Dyke; Almeley, and Eardisley 230
"Almeley Castle and Church," by Rev. R. Hyett Warner 235
Eardisley—The Upper House—Measurements of Oak Trees in the Parish—The Church, by H. Cecil Moore 240
"Byletts at Pembridge," Notes by James G. Wood, F.S.A. 242
"Rowe Ditch," Notes by James W. Lloyd 243
"The Rowe Ditch in Radnor," Notes by James G. Wood, F.S.A. 244
"Offa's Dyke—The Gap in the Weobley District," by Alfred Watkins ... 246
"Offa's Dyke and Watts' Dyke," by H. Cecil Moore 250
"Offa's Dyke and Watts' Dyke," by James G. Wood 254
"Eardisley and its Castle," by Rev. R. Hyett Warner 256
"Eardisley and its Castle," Addendum, by Rev. R. Hyett Warner 287
"The Discovery of a Columbarium in the Tower of Sarnesfield Church, Herefordshire," by George Marshall 263
"Additional Notes on Pigeon Houses," by Alfred Watkins 264
"The Occurrence of the Mistletoe in Herefordshire upon the Plum and Peach," by Thomas Blashill 265
2nd Field Meeting, Tuesday, June 28th, Ruins of Craswall Priory, Craswall Church 267
Llangwathan, by Rev. W. E. T. Morgan 270
"Craswall Priory and Manor," by C. J. Lilwall 272
"The Manor of Craswall," Dispute as to Boundaries, 1695, per John Lloyd 275
"Craswall Church," by C. J. Lilwall 279
"White-leaved Oak at Whiteoak Farm, Craswall," by H. J. Marshall and H. Cecil Moore 282
"Place Names of the Neighbourhood of Hay," by Rev. W. E. T. Morgan 285
3rd Field Meeting (Ladies' Day), Thursday, July 21st. Tintern Abbey ... 288
"Things to be Observed between Ross and Chepstow," by James G. Wood, F.S.A. 291
"Tintern Abbey," by Philip Baylis 294
"A Short History of Tintern Abbey" and the Lordship of Striguil, by James G. Wood, F.S.A. 300
Pedigree of Early Lords of Striguil, by James G. Wood, F.S.A. to face page 306
4th Field Meeting, Thursday, August 25th, Wyre Forest 312
"Cleobury Mortimer Church," by Robert Clarke 315
Cleobury Mortimer Castle, by H. Cecil Moore 317
"The Herefordshire Domesday," by Rev. A. T. Bannister 318
"Drift in the Wye Valley," by T. S. Aldis 325
"Drifts in Herefordshire, and evidences of action of Land Ice," by H. Cecil Moore 330
"Further Notes on Ice Action, and on Ancient Drainage Systems connected with the Wye Valley," by Rev. H. E. Grindley 336
Herefordshire Tokens of the Seventeenth Century, by James W. Lloyd ... 340
"The late Rev. W. H. Purchas," by Rev. A. Ley... 341
Annual Winter Meeting, Tuesday, December 13th 345
Craswall Priory, results of excavations at 346
Ancient Earthworks and Fortified Enclosures—Hints to Helpers 349
Woolhope Club Library, Books received during 1904, by H. Cecil Moore ... 352
British Earthquakes, Letter from Prof. Chas. Davison, D.Sc. 353
The Wild Birds Protection (County of Hereford) Order, June 3rd, 1904 ... 355
Rainfall in Herefordshire in 1904, compiled by H. Cecil Moore... 357
"The Goshawk," by James B. Pilley... 361
"Herefordshire Diptera, the Platypezidæ, Pipunculidæ, and Syrphidæ," by John H. Wood, M.B. 363
Inscribed Stones at Eardisley Church and Areley Kings Church, by R. Clarke 376
"The Hereford Miracles," by Rev. A. T. Bannister 377
Errata et Addenda 384
General Index ... ... pages 385 to the end

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CONTENTS (*Continued*).

Illustrations, Diagrams, Tables, &c.

	PAGE.
1 & 2 Woolhope Limestone, Scutterdine Quarry, Fownhope, 2 views	between pages 28 and 29
3. Oak tree on the Sufton Court Estate, Mordiford ...	to face page 35
4 & 5. Foxglove, with open terminal efflorescence, 2 photographs	between pages 48 and 49
6. Plan & Section of the large Quarry above Westmancote	to face page 64
7 & 8. Tho White Stone, Withington, 2 views... ...	between pages 108 & 109
9. Yew Tree in Yarkhill Churchyard; taken from the south-east	to face page 121
10. Severn Bridge. Each of the two nearest spans is 327 feet	to face page 167
11. Crick Manor House	to face page 171
12. Roman Roads into Herefordshire & Monmouthshire	to face page 190
13. Tablet in Mathern Church to the memory of St. Teudric	to face page 192
14. Ruined Saxon-Norman Chapel near the Severn Tunnel Pumping Station	to face page 193
15. Table of Rainfall in 1903 at 22 stations in Herefordshire	to face page 220
16. Landslip on 17th February, 1904, near Putley Cockshoot	to face page 228
17. Lyonshall Church...	to face page 231
18. Embankment, Offa's Dyke, Lyonshall; between Holme Marsh and Lynhales	to face page 232
19. Friends' Old Meeting House, dated 1672, at Almeley Wotton ... ... to face No. 20 20. Summer House, Almeley Wootton; back view to face No. 19	between pages 232 & 233
21. "The Twt" (Batch Twt) at Almeley, to face No. 22 22. "Almeley's Twt," Plan of the Site of Castle Almeley ... ... to face No 21	between pages 232 & 233
23. Norman Billet-mould, Court House, Almeley ...	to face page 235
24 & 25. The Upper House, Eardisley. 2 Views ...	between pages 240 & 241
26. Three Yew Trees, "The Three Shepherds," on Offa's Dyke, Rushock Hill	to face page 241
27. Sarnesfield Church Tower (exterior) to face No. 28 28. " " (interior) North wall of the Columbarium, to face No. 27	between pages 262 & 263
29. Craswall, "Abbey Farm." The trees in the central foreground cover the site of the ruined Priory. The hill outlined in the central background is called "The Cat's Back"	to face page 271

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ILLUSTRATIONS, DIAGRAMS, TABLES, &c. *(Continued).*

30. Craswall Priory—Apsidal east end, showing the stone altar and ambulatory behind it. To face No. 31
31. Craswall Priory—East end, showing, on the south wall of the chancel, the credence, double piscina, seats for priest and deacons .. To face No. 30
32. Craswall Priory—South wall of chancel, showing Norman doorway, seats for sub-deacon and deacon, double piscina, seat for priest, and a portion of credence ... ... To face No. 33
33. Craswall Priory—Nave, looking west, showing, upon the right, the large aumbry and doorway in the north wall of the chancel ... To face No. 32
34. Craswall Priory—South side of chancel, showing doorway, seats for sub-deacon and deacon, double piscina, priest's seat, credence recess, and splay of Lancet window .. ... To face No. 35
35. Craswall Priory—Looking east, showing the circular form of chancel and the old stone altar *in situ*. To face No. 34

} Between pages 272 and 273

36. Craswall Priory—North side of chancel, Interior, showing the stone altar with space behind, and a large aumbry on the left; also the chancel steps... to face page 273

37. Chepstow Church, Portion of west front to face No. 38
38. ,, ,, Font... ... ... to face No. 37

} between pages 288 & 289

39. Pedigree of the Early Lords of Striguil ... ... to face page 306

40. Portrait of the late Rev. W. H. Purchas ... ... to face page 341

41. Inscribed Stones in Eardisley Church and at Areley Kings Church ... ... to face page 376

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1863 Hoskyns, Mr. Chandos Wren.
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December 31st, 1904.

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Black, Rev. C., M.A., Colwall, Malvern.

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Blashill, Mr. T., F.Z.S., 29, Tavistock Square, W.C., London (*Ex-President*).
Boulton, Mr. F. J., Elmhurst, Aylstone Hill, Hereford.
Boycott, Arthur E., M.D., The Grange, Broomy Hill, Hereford.
Boycott, Mr. W. J., The Grange, Broomy Hill, Hereford.
Bradney, Mr. J. A., F.S.A., Talycoed Court, Monmouth.
Brierley, Mr. George M., The Quinta, Letton, Hereford.
Brierley, Mr. J. C., The Quinta, Letton, Hereford.
Britten, Mr. W. E., Bodenham Road, Hereford.
Brown, Mr. William, Whitchurch, Ross.
Bull, Mr. Ernest Henry, St. John Street, Hereford.
Bulmer, Mr. E. F., Fayre Oakes Cottage, Hereford.
Burrough, Rev. Charles, M.A., Eaton Bishop, Hereford (*Ex-President*).
Caddick, Mr. Edward, Wellington Road, Edgbaston.
Caldicott, Rev. Cecil B., Middleton-on-the-Hill, Layster's Pole, Tenbury.
Caldicott, Mr. J. U., Netherwood, Hereford.
Campbell, Lieut.-Col. J. E. R., Tillington Court, Hereford.
Campbell, Mr. A. S., Chepstow House, Ross.
Capel, Rev. Canon Bury, M.A., 7, Clifton Hill, Clifton.
Capel, Rev. A. J., M.A., The College, Hereford.
Carless, Mr. Joseph, Aylstone Hill, Hereford.
Carver, Mr. Thomas, Meyrick House, Whitecross Road, Hereford.
Cave, Mr. E. L., Felsingham, Bromyard.
Chance, Mr. T. G., 129, Hopton Road, Streatham, S.W.
Chapman, T. A., M.D., Betula, Reigate (*Ex-President*).
Child, Mr. George, Nunnington, Hereford.
Clarke, Rev. W. S., M.A., The Thorn, Ross.
Clarke, Mr. John, Ashfield, Ross.
Clarke, Mr. Robert, 4, Portland Street, Hereford.
Conder, Mr. E., New Court, Colwall, Malvern.
Cook, Mr. Truman J., Rydal Mount, South Bank, Hereford.
Cooke, Mr. C. W. R., M.A., Hellens, Much Marcle, Dymock, Gloucestershire.
Corner, Mr. Arthur J., Newstead House, Hereford.
Corner, Mr. James, Holmer Park, Hereford.
Cornewall, Rev. Sir G. H., Bart., M.A., Moccas Court, Hereford (*Ex-President*).
Cotterell, Sir John Geers, Bart., Garnons, Hereford: also 10, Hertford Street, Mayfair, W.
Craft, Rev. R. H., Sutton Rectory, Hereford.
Crespi, Dr. A. J. H., M.R.C.P.I., Cooma, Wimborne.
Cresswell, Mr. G., Ocle Court, Hereford.
Cutfield, Mr. Arthur, Merton House, Ross.
Davies, Mr. James, Broomy Hill, Hereford (*Ex-President. Hon. Auditor.*)
Davies, Mr. John E. P., Beech Grove, Titley, R.S.O.
Davis, Mr. Luther, Abergavenny.
Deakin, Mr. S., Weir End, Ross.
De Winton, Rev. J. J., The Vicarage, Hay.
Doughty, Major Chester, Pembroke House, Aldeburgh-on-Sea, Suffolk.

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Dryland, Mr. A., The Poplars, Aylstone Hill, Hereford.
Duncombe, Rev. W. D. V., M.A., The College, Hereford.
Du Buisson, Mr. Edward, Castle Street, Hereford.
Easton, Mr. H., Corn Square, Leominster.
Ellwood, Mr. M. J., 25, Draper's Lane, Leominster.
Evans, Mr. Robert H., Eyton Hall, Leominster.
Evill, Rev. H. M., St. Martin's Vicarage, Hereford.
Fernandez, Rev. P. H., M.A., Ross.
Fitzsimons, J. B., M.D., The Cottage, Lympstone, South Devon.
Fortey, Mr. Charles, Abbey Villa, Ludlow.
Foster, Mr. Arthur W., Brockhampton Court, Ross.
Fricker, Mr. C. J., Carlton House, Abergavenny.
Gardner, Mr. Iltyd, Nevill Street, Abergavenny.
Gedge, Rev. E., Marden Vicarage, Hereford.
Getting, Mr. H. F., Ashfield Park, Ross.
Glendinning, J., M.D., Larchfield, Abergavenny.
Gowring, Mr. E. A., Tre-Evan, Llangarren, Ross.
Grasett, Rev. J. E., Allensmore, Hereford.
Green, Rev. Preb. C. E. Maddison, M.A., Ledbury.
Green, Mr. Arthur R., L.R.C.P., The Yews, Ledbury.
Greenly, Mr. E. Howorth, M.A., Titley Court, Titley, R.S.O.
Grindley, Rev. H. E., M.A., The Palace, Hereford.
Hadfield, Mr. G. H., Moraston, Ross.
Hall, Mr. H. S., Dormington Court, Hereford.
Harington, Sir Richard, Bart., M.A., B.C.L., Whitbourne Court, Worcester.
Harington, Rev. Robert, M.A., Peterstow Rectory, Ross.
Harington, Rev. C., Aymestrey Vicarage, Kingsland, R.S.O.
Harris, Rev. Edward, D.D., Upper Bullinghope, Hereford.
Hatton, Mr. E. J., Aylstone Hill, Hereford.
Hawkins, Mr. J. F., County Offices, Reading.
Haywood, Mr. W. H., Westfield House, Hereford.
Hereford, Mr. J. Tuder, Sufton Court, Hereford.
Hewitt, Rev. J. B., Upper Sapey Rectory, Clifton-on-Teme, Worcester.
Hinckes, Mr. Ralph P., Foxley, Hereford.
Holloway, Rev. E. J., M.A., Clehonger, Hereford.
Hopton, Rev. Preb. M., M.A., Holmer Hall, Hereford.
Hopton, Major-General Sir Edward, K.C.B., Homend, Ledbury.
Horton, Rev. A. W., M.A., Dewsall, Hereford.
Hovil, Mr. F. Saunders, Grafton Lodge, Hereford.
Howell, Mr. W., M.B., Watton House, Brecon.
Hudson, Mr. A. G., South Street, Leominster.
Humfrys, Mr. W. J., Bridge Street, Hereford.
Hutchinson, Mr. Thomas, Aylstone Hill, Hereford (*President, 1904*).
Ingham, His Honour Judge, R. W., Sugwas Court, Hereford.
Ireland, Rev. W., M.A., Lucton, Kingsland, R.S.O., Herefordshire.
Jackson, Mr. J. J., Broad Street, Hereford.

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James, Mr. F. R., Lifton House, Bodenham Road, Hereford.
Johnson, Mr. Arthur, Broomy Hill, Hereford.
Jones, Rev. A. G., M.A., Yarkhill, Hereford.
Jones, Mr. Herbert, 119, St. Owen Street, Hereford.
Jones, Mr. Herbert E., Ewyas Harold, Herefordshire.
Kempson, Mr. F. R., 16, High Street, Cardiff.
King-King, Rev. E., Lower Wilcroft, Hereford.
Lambe, Mr. John, Bridge Street, Hereford.
Lambert, Rev. Preb. W. H., M.A., Stoke Edith Rectory, Hereford (*Ex-President*).
Lamont, Mr. A. H., 12, Hugheuden Road, Clifton.
Lea, His Honour Judge Harris, Broadlands, Hereford.
Le Brocq, Mr. W. P. J., Preparatory School, Brecon.
Ledger, Rev. C. G., Tupsley Vicarage, Hereford.
Leigh, The Very Rev. The Hon. J. W., D.D., The Deanery, Hereford (*Ex-President*).
Levason, Mr. Peyton, Wallington House, Ross Road, Hereford.
Ley, Rev. A., M.A., Sellack Vicarage, Ross (*Ex-President*).
Lighton, Rev. Claud, B.A, Mordiford Rectory, Hereford.
Lilley, Mr. Charles E., Bodenham Road, Hereford.
Lilley, H., M.D., 34, Castle Street, Hereford.
Lilwall, Mr. Charles James, Llydyadyway, Cusop, Hay, R.S.O.
Livingstone, Rev. Canon R. J., M.A., Pencombe Rectory, Worcester.
Llanwarne, Mr. Thomas, Aylstone Hill, Hereford.
Lloyd, Mr. J. W., Bridge Street, Kington.
Lloyd, Mr. W. G., Bodenham Road, Hereford.
Lubienski-Bodenham, Count Louis, Manor House, Lower Bullingham, Hereford.
Machen, Mr. C. E., Bicknor Court, Coleford.
Marshall, Rev. H. B. D., M.A., Norton Canon, Weobley, R.S.O. (*Ex-President*).
Marshall, Rev. Mathew, M.A., Burbage Vicarage, Buxton.
Marshall, Dr. G. W., LL.D., F.S.A., Sarnesfield Court, Weobley, R.S.O.
Marshall, Mr. George, The Batch, Weobley.
Marshall, Mr. H. J., Gayton Hall, Ross.
Mathews, Mr. Norman H., Broomy Hill, Hereford.
McLaughlin, Rev. A. H., Much Birch, Hereford.
Merrick, Mr. F. H., Goodrich House, Hereford.
Moffatt, Mr. H. C., Goodrich Court, Ross.
Money-Kyrle, Rev. R. T. A., Kentish Town Vicarage, London, N.W.
Money-Kyrle, Rev. C. A., Much Marcle, Dymock.
Moody, Mr. C. E.; Breinton, Hereford.
Moore, Mr. Charles E. A., Fairlawn, Leominster.
Moore, Mr. H. Cecil, 26, Broad Street, Hereford (*Ex-President*), *Co-Honorary Secretary.*
Morgan, Captain T. L., Southfield Lodge, Abbey Road, Malvern.
Morgan, Mr. T. D., Vaga Villas, Hereford.
Morgan, Rev. W. E. T., Llanigon, Hay, R.S.O.
Morris, Mr. Edgar F., St. Owen Street, Hereford.
Morris, Mr. T. W., Woraston Lodge, Coleford.

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Morrison, Mr. C. S., Firbank, Burghill, Hereford.
Neild, Mr. Theodore, The Vista, Leominster.
Oldham, Capt. C. Dansey, Bellamour Lodge, Colton, Staffordshire.
O'Neill, Rev. K., Mansel Lacy, Hereford.
Parker, Mr. Alfred, Kington.
Parker, Mr. H. J., 6, St. John Street, Hereford.
Parker, Mr. John, Nelson Street, Hereford.
Paris, Mr. T. C., Hampton Lodge, Hereford.
Parry, Mr. J. H., Harewood Park, Ross.
Phillott, Mr. G. H., Plâs Trevor, Charlton Kings, Cheltenham.
Phillpots, Mr. G. H., Bredon, Tewkesbury.
Pilley, Mr. James B., 2, High Town, Hereford (*Assistant Secretary*).
Pilley, Mr. Walter, Barton Villas, Hereford.
Pope, Rev. A., Upton Bishop Vicarage, Ross.
Popert, Mr. E. P., Braceland, Coleford.
Powell, Rev. T. Prosser, M.A., Dorstone, Hereford.
Powell, Scudamore, M.D., Cagedale, Clehonger, Hereford.
Prescott, Mr. Charles Warre, M.A., King's Pyon House, Weobley, R.S.O.
Probert, Mr. John, Breinton Road, Hereford.
Pulley, Colonel Charles, commanding 2nd Ghoorkas.
Pumphrey, Mr. Henry W., Highwell, Bromyard.
Purchas, Mr. H. M., Broad Street, Ross.
Purser, Col. T. H., Bird's Eye, Bromyard.
Ragg, Rev. W. H. Murray, M.A., Cathedral School, Hereford.
Rankin, Sir James, Bart., M.P., M.A., Bryngwyn, Hereford, and 35, Ennismore Gardens, Princes Gate, London, S.W. (*Ex-President*).
Riley, Mr. John, M.A., Putley Court, Ledbury.
Robinson, Mr. Stephen, Lynhales, Kington,
Robinson, Mr. W. W., King Street, Hereford.
Rootes, Mr. Charles, St. Owen Street, Hereford.
Scobie, Mr. M. J. G., Armadale, Hereford.
Scudamore, Colonel E. S. Lucas, Kentchurch, Hereford.
Shepherd, Rev. W. R., Preston-on-Wye, Hereford.
Simpson, Mr. Albert, Burghill Grange, Hereford.
Sinclair, G. Robertson, Mus. Doc., The Close, Hereford.
Small, Mr. A. P., St. Mary Street, Ross.
Somers-Cocks, Rev. H., Eastnor Rectory, Ledbury.
Southall, Mr. Henry, F.R. Met. Soc., The Graig, Ashfield, Ross (*Ex-President*).
Stanhope, The Ven. The Hon. B. L. S., M.A., Byford, Archdeacon of Hereford.
Stephens, Mr. Edwin, Carlton Villa, Whitecross, Hereford.
Stephens, Mr. J. W., Womaston, Kington.
Steward, Mr. Walter H., Pontrilas, R.S.O., Herefordshire.
Stooke, Mr. Edwin, Aylstone Hill, Hereford.
Stooke, Mr. J. E. H., 2, Palace Yard, Hereford.
Stooke-Vaughan, Rev. F. S., M.A., Wellington Heath, Ledbury.
Sugden, Mr. J. P., The Cottage, Ledbury.

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Swayne, Mr. Robert A., Tarrington House, Hereford.
Symonds, Mr. J. F., Broomy Hill, Hereford.
Symonds, Mr. J. Reginald, 15, Bridge Street, Hereford.
Symonds-Tayler, Captain, Beechwood, Hereford.
Thomas, Lieut.-Colonel Evan, Over Ross, Ross
Trafford, Mr. Guy R., Hill Court, Ross.
Treherne, Rev. C. A., M.A., All Saints' Vicarage, Hereford.
Turner, Mr. Thomas, F.R.C.S., St. Owen Street, Hereford.
Wadworth, Mr. H. A., F.R.G.S., Breinton Court, Hereford.
Walker, Mr. Philip, F.G.S., Belmont, Hereford, and 36, Princes Gardens, S.W.
Wallis, Mr. E. L., Hampton Park, Hereford.
Warner, Rev. R. Hyett, M.A., Almeley, Eardisley, R.S.O.
Watkins, Mr. Alfred, Hampton Park, Hereford.
Watkins, Rev. Morgan G., M.A., Kentchurch, Hereford (*Ex-President*).
Weare, Mr. Edwin, Hampton Bishop, Hereford.
Weyman, Mr. Arthur W., Broad Street, Ludlow.
Wheeler, Mr. G. W., Shrub Hill Villas, Tupsley, Hereford
Wilmot, Rev. F. E. W., Monnington-on-Wye, Hereford.
Williamson, Rev. Preb. H. Trevor, M.A., Bredwardine, Hereford.
Winnington-Ingram, Rev. Preb. E. H., M.A., Ross.
Winterbourn, Mr. T. H., Broad Street, Leominster.
Wood, J. H., M.B., Tarrington, Hereford.
Wood, Rev. R., Colley Batch, Tenbury.
Woodward, Mr. Ernest T., Daffaluke, Ross.

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MEMBERS ELECTED.

1902.

Burn, Lieut.-Colonel A. E., Almeley, Eardisley.
Evill, Rev. H.M., St. Martin's Vicarage, Hereford.
Frost, Mr. J. Kingdon, Moorfield House, Hereford.
Grindley, Rev. H. E., M.A., The Palace, Hereford.
Hutchinson, Major-General Alex. H., Wythall, Ross.
Jones, Mr. Herbert E., Ewyas Harold, Herefordshire.
Stephens, Mr. J. W., Kington, Herefordshire.
Treherne, Rev. C. A., M.A., All Saints' Vicarage, Hereford.
Ulph, Mr. G. W., Llydyadyway, Cusop.
Vansittart, Mr. H. C., Wilton Court, Ross.
Woodifield, Mr. C. G., Hafod Road, Hereford.

1903.

Apperley, Mr. Henry Wm., 98, Lauderdale Mansions, Maida Vale, London, W.
Brierley, Mr. J. C., Quinta, Letton.
Burder, Mr. A. W., Wilcroft, Lugwardine, Hereford.
Gedge. Rev. Edmund, Marden Vicarage, Hereford.
Gurney, Mr. E. C., Home Leigh, Aylstone Hill, Hereford.
Hewitt, Rev. J. B., M.A., Upper Sapey Rectory, Clifton-on-Teme, Worcester.
Hudson, Mr. A. G., South Street, Leominster.
James, Mr. F. R., Lifton House, Bodenham Road, Hereford.
King King, Rev. Eustace, Lower Wilcroft, Hereford.
Ledger, Rev. C. G., Tupsley Vicarage, Hereford.
Philpotts, Mr. G. H., Bredon, Tewkesbury.
Wilmot, Rev. F. E. W., Monnington-on-Wye Rectory, Hereford.

1904.

Armitage, Mr. C. M., Birmingham District and Counties Banking Company, Hereford.
Barneby, Mr. Wm. Theodore, Saltmarshe Castle, Bromyard.
Boycott, Mr. William James, The Grange, Broomy Hill, Hereford.
Bulmer, Mr. E. F., Fayre Oaks Cottage, Hereford.
Campbell, Mr. A. J., Chepstow House, Ross.
Clarke, Mr. John, Ashfield, Ross.
Craft, Rev. R. H., Sutton Rectory, Hereford.

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Deakin, Mr. S., Weir End, Ross.

De Winton, Rev. J. Jeffreys, Hay.

Lamont, Mr. A. H., 12, Hughenden Road, Clifton.

Neild, Mr. Theodore, The Vista, Leominster.

Shaw, Mr. Henry Howard, Birmingham District and Counties Banking Company, Hereford.

Simpson, Mr. Albert, Burghill Grange, Hereford.

Somers-Cocks, Rev. Henry, Eastnor Rectory, Ledbury.

Stooke, Mr. E. H., 2, Palace Yard, Hereford.

Swayne, Mr. Robert, Tarrington, Hereford.

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OBITUARY.—MEMBERS.

1902.

Croft, Sir Herbert, Bart., Lugwardine Court.
Poole, Rev. Preb. Wm., Hentland.
Relton, Rev. A., Brinsop Vicarage.

1903.

Attwood-Mathews, Mr. B. St. John, Pontrilas Court.
De Winton, Capt. R. H., Graftonbury.
Elliot, Rev. Preb. Wm., Church Stretton.
Price, Mr. W. Elliott, Ross.
St. John, Rev. H. F., Dinmore Manor.

1904.

Ashley, Rev. Preb. G. E., Stretton Sugwas Rectory.
Brown, Mr. J. P., Hereford.
Colt, Mr. E. W., Streethay Lodge, Lichfield.
Masefield, Mr. J. Basil, The Knapp, Ledbury.

HONORARY MEMBERS.

Purchas, Rev. Wm. H., Alstonfield, Ashbourne.
With, Mr. G. H., Hereford.

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RULES

OF THE

Woolhope Naturalists' Field Club.

I.—That a Society be formed under the name of the "WOOLHOPE NATURALISTS' FIELD CLUB," for the practical study, in all its branches, of the Natural History and Archæology of Herefordshire, and the districts immediately adjacent.

II.—That the Club consist of Ordinary Members with such Honorary Members as may be admitted from time to time; from whom a President, four Vice-Presidents, a Central Committee, Treasurer, and Honorary Secretary be appointed at the Annual Meeting to be held at Hereford in the early part of each year. The President and Vice-Presidents to change annually.

III.—The Central Committee shall consist of Five Members, resident in the city or its immediate vicinity, with the President, Vice-Presidents, Treasurer, Auditor, and Honorary Secretary, *ex-officio*. It shall be empowered to appoint an Assistant Secretary; and its duties shall be to make all the necessary arrangements for the meetings of the year, and take the management of the Club during the intervals of the meetings.

IV.—That the Members of the Club shall hold not less than three Field Meetings during the year, in the most interesting localities for investigating the Natural History and Archæology of the district. That the days and places of such regular meetings be selected at the Annual Meeting, and that ten clear days' notice of each be communicated to the Members by a circular from the Secretary; but that the Central Committee be empowered, upon urgent occasions, to alter the days of such regular Field Meetings, and also to fix special or extra Field Meetings during the year.

V.—That an Entrance Fee of Ten Shillings shall be paid by all Members on election, and that the Annual Subscription be Ten Shillings, payable on the 1st January in each year to the Treasurer, or Assistant Secretary. Each Member may have the privilege of introducing a friend on any of the Field days of the Club.

VI.—That the Reports of the several meetings and the papers read to the Club during the year, be forwarded, at the discretion of the Central Committee, to the *Hereford Times* newspaper for publication as ordinary news, in preparation for the *Transactions* of the Club.

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VII.—That the cost of any lithographic or other illustrations be defrayed by the author of the paper for which they may be required, unless the subject has been taken up at the request of the Club, and in that case, the cost of such illustration, to be paid for from the Club funds, must be specially sanctioned at one of the general meetings.

VIII.—That the President for the year arrange for an address to be given in the field at each meeting, and for papers to be read after dinner; and that he be requested to favour the Club with an address at the Annual Meeting on the proceedings of the year, together with such observations as he may deem conducive to the welfare of the Club, and the promotion of its objects.

IX.—That all candidates for Membership shall be proposed and seconded by existing Members, either verbally or in writing, at any meeting of the Club, and shall be eligible to be balloted for at the next meeting, provided there be FIVE Members present; one black ball in three to exclude.

X.—That Members finding rare or interesting specimens, or observing any remarkable phenomenon relating to any branch of Natural History, shall immediately forward a statement thereof to the Hon. Secretary, or to any member of the Central Committee.

XI.—That the Club undertake the formation and publication of correct lists of the various natural productions of the County of Hereford, with such observations as their respective authors may deem necessary.

XII.—That any Member, whose Annual Subscription is twelve months in arrear, shall not be entitled to any of the rights and privileges of membership, and that any Member whose Annual Subscription is *two* years in arrear, may be removed from the Club by the Central Committee.

XIII.—That the Assistant Secretary do send out circulars, ten days at least before the Annual Meeting, to all Members who have not paid their subscriptions, and draw their particular attention to Rule XII.

XIV.—That these Rules be printed annually with the *Transactions*, for general distribution to the Members.

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The Woolhope Club.

The Account of HENRY CHILD BEDDOE, Hon. Treasurer, for the Year ended 31st December, 1902.

1902.	£	s.	d.
To Balance in hand brought forward from last Account	72	10	9
,, Entrance Fees received	5	10	0
,, Subscriptions for 1902	110	10	0
,, Arrears of Subscriptions received for 1901 ...	3	0	0
,, Mr. T. Blashill, for Subscription for Transactions, 1852 to 1865	5	5	0
,, Mr. H. Cecil Moore, Hon. Sec., for ditto ...	2	10	0
Excess of Subscriptions (2 at 6d.)	0	1	0
	£199	6	9

1902.	£	s.	d.
By paid Hon. Sec. for Editorial Expenses ...	2	13	0
Ditto Annual Payments ...	2	15	5
Ditto for Type Writing Papers and Transactions from 1852 to 1865	8	4	10
Ditto for Preliminary Arrangements for Field Meetings ...	3	0	9
Ditto Expenses of Brit. Mycological Society	0	17	6
,, Jakeman & Carver for Printing	8	9	6
,, Joseph Jones for Stationery	1	10	11
,, J. B. Pilley, Assistant Secretary, 1 Year's Salary	10	0	0
,, Ditto Sundry Expenses at Field Meetings, Postages, &c.	5	18	6
	£43	10	5
,, Balance in hands of Treasurer ... 157 16 4			
Less overpaid into Bank 2 0 0			
	155	16	4
	£199	6	9

	£	s.	d.
Excess of Balance brought forward ...	0	10	0
Mr. Le Brocq, sub. paid direct into Bank and also paid into Bank by Sec. in error	0	10	0
Mr. H. C. Moffatt's subs. for 1903 ...	0	10	0
Mr. Pilley ditto ...	0	10	0
	£2	0	0

Audited and found correct,

30th March, 1903. JAMES DAVIES, Auditor.

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The Woolhope Club.

The Account of HENRY CHILD BEDDOE, Hon. Treasurer, for the Year ending 31st December, 1903.

1903	£	s.	d.
To Balance in hand brought forward from last Account	155	16	4
,, Entrance Fees received	4	10	0
,, Subscriptions for 1903	111	10	0
,, Arrears of Subscriptions received for 1902 ...	8	0	0
,, Mr. H. Cecil Moore, for Volumes of Transactions sold	5	0	0
,, Excess of Subscription, 6d.	0	0	6
	£284	16	10

1903.	£	s.	d.
By paid Jakeman & Carver for Printing ...	1	10	3
,, ,, Jakeman & Carver for Printing Transactions and Stationery	154	7	6
,, ,, Donation to Caerwent Fund	2	2	0
,, ,, Subscription to Congress of Archæological Societies	1	0	0
,, ,, Jakeman & Carver for Printing ...	9	8	6
,, ,, H. Cecil Moore, Esq., for Editorial Expenses and Secretary's Disbursements	11	8	0
,, ,, Joseph Jones for Stationery	0	19	9
,, ,, Ladmore for Copying Maps	0	15	0
,, ,, J. B. Pilley Assistant Secretary, for 1 Year's Salary	10	0	0
,, ,, Postages and Sundry Expenses at Field Meetings	5	2	0
,, Balance in hands of Treasurer	88	3	10
	£284	16	10

	£	s.	d.
Bank Pass Book, 31st December, Balance	92	3	10
Less overpaid as per last Account, £2 ,, 4 Subscriptions for 1904, £2 ...	4	0	0
	£88	3	10

Examined and found correct this sixth day of April, 1904.

JAMES DAVIES, Hon. Auditor.

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1902.

Woolhope Naturalists' Field Club.

The present volume treats generally of *The Transactions* of the Woolhope Naturalists' Field Club immediately following the conclusion of the 50th year since its institution. The preceding volume recorded the proceedings of the Annual Meeting held on 3rd April, 1902, embodying the instructive and stimulating address given by Mr. Thomas Blashill, F.R.I.B.A., on the termination of his office as President for 1901, the jubilee year of the Club.

On page 225 of the preceding volume a condensed report is given of "The Weather in Herefordshire during the Nineteenth Century," as delivered orally by Mr. H. Southall, F.R. Met. Soc., on 27th August, 1901, to the members at the meeting at Goodrich. We are now able to publish several elaborate Tables collated by Mr. Southall.

The results of local observations extending over so protracted a period as 85 years are valuable for their better comparableness; such a record is rarely attainable—their value is enhanced by our confidence in Mr. Southall as an accurate and painstaking observer and recorder. The members of the Woolhope Club appreciate his laborious work, and, in deep gratitude for his toils, congratulate themselves on being able to record so valuable a series of statistical Tables.

The comparison of the local rainfall in Herefordshire with that upon the elevated regions in Radnorshire, which supply the upper reaches of the river Wye, comes to us at the interesting period when we find impending upon us the completion of the impounding of the upper waters of the Wye, in the Reservoirs of the Elan Valley in Wales, for the supply of the City of Birmingham.

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"WEATHER IN HEREFORDSHIRE DURING THE NINETEENTH CENTURY."

By H. Southall, F.R. Met. Soc.

Almost everything of importance which has occurred during the last hundred years has been brought under critical review, and therefore it may not be out of place to discuss the perplexing subject of climate with its eccentric variations of heat and cold, drought, and rainfall, as well as some of the other atmospheric phenomena connected with them.

The writer of this paper has frequently contributed articles, which have been printed in *The Transactions* of the Woolhope Naturalists' Field Club, bearing on some remarkable events which have occurred from time to time, so that he does not propose now to do more than attempt a *resumé* of the whole period with a view of finding out, if possible, from the experience of the past, some clue to what there may be in store for us in the future; at any rate to ascertain what appears to be the limit of variation as regards rainfall and temperature, and whether or no there is any periodicity in certain changes which will guide us in our anticipations of the future.

In the first place perhaps Herefordshire may be regarded as a typical "West Midland" district of England, having nearly as great a range of temperature as any part of the British Isles, much larger indeed than on the seaboard of the South West of England, and although the average mean temperature is higher than that of Wales and the Northern and Western parts of the kingdom, this is caused by the temperature being higher in summer in the Midland districts.

In calm weather during settled frost the thermometer sometimes falls to zero (Fahrenheit), whilst it occasionally rises, as in 1868, July 22nd, to 97 deg. in the shade, so that there is a range of nearly a hundred degrees. This is probably true of a comparatively small area near the centre of England.

Considerable progress has been made during the last century in the power to forecast the weather; for although we cannot as yet accurately foresee what would happen on any given day, yet by the records of the past, by strictly tabulating and charting them and reasoning upon them, there are certain conditions of weather which we may rely upon as being likely to produce other certain conditions.

The consecutive observations which have been taken in Hereford, shire siuce 1818, or for some 85 years, form an ample period for attaining to something like an idea of what the English climate, in this portion of the kingdom at any rate, is like. But whilst we find that every year as it succeeds another is unlike any previous year, we also find that a certain character of climate has a tendency to repeat itself for a number of years together.

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This has been sometimes described as "Persistency of Tpye." For instance; we experience a cycle of wet years or a cycle of dry years, but unfortunately there is no absolute rule as to time. Variation in temperature is not so great as many people suppose, as will be seen later on. This has also a tendency to repeat itself, especially in our summers. We sometimes get hot summers for four consecutive years, as in 1778 to 1781 and 1856-1859, and sometimes three or four cold ones following each other, such as occurred comparatively lately, in 1878-9, 1879-80, and 1880-1881, in which years the winters were particularly severe, and in this case rather singularly they were followed by three consecutive very mild winters—1881-1882, 1882-1883, 1883-1884. But no one can say that because we have had two hot or two cold seasons we should necessarily have three or four hot or cold summers or winters in succession.

What we conclude from our observations on the weather is that there must be some definite rule: so that if we investigate still more we may possibly be able to ascertain the causes of the movements of storms, etc., and be able also to tell much more than we can at present how these storms originate, what course they will take, and their results upon the weather generally.

I suspect few counties can show a more continuous or reliable series of recorded observations than those taken at Orleton, near Tenbury, by the late Mr. T. H. Davis, extending from 1830 to 1888, or for fifty-nine years. And as Mr. G. J. Symons, the great rainfall authority, attached great value to the importance of these records and thought Mr. Davis to be a most accurate and painstaking observer, I have included them in this paper, although strictly speaking they are just outside our county boundary.

As regards observations of temperature, I have had to rely on my own observations. All I can say of their accuracy is that the instruments have been frequently inspected and tested by officers of the Royal Meteorological Society as well as the stands and mode of observations so that they may compare with those of other trained observers. I have also compared them with those made at the Royal Observatory, Greenwich, and have reason to consider them fairly trustworthy and correct.

It may be needless to insist that unless great care is taken in these respects records have little, if any, comparative value.

It may simplify matters to take the rainfall, temperature, and other remarkable features of weather separately, but before doing so it may be observed that the influence of the weather upon the prosperity of the country and on our pleasure and comfort is so great that we can scarcely be too much forewarned in order that we may be forearmed to meet the vicissitudes of climate to which we are subject in these islands. The writer was much struck with the remark of an old traveller that in his opinion there was no climate in the world equal to the British.

What we are so apt to complain of in cloudy unseasonable or inclement weather, only prepares us the more to enjoy the really bright and not too hot summers which we had from 1896 to 1901, which

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we are often privileged to enjoy not only in our summers but also in some of our springs and occasionally extending to late autumn.

First as to Rainfall.

There are no county records that I know of till 1818, and the observers since then have been the following:—Captain Pendergrass, of Pool Cottage, Much Dewchurch, some six miles N.W. from Ross, and probably 400 feet above sea level. His records are continuous from January, 1818, to December, 1842, or for 25 years. They were published in the early Journals of the Meteorological Society, of which he was an active Fellow.

From 1843 to 1851, there is another series of observations taken at Burcher Court (597 feet above sea level) Titley, near Kington, by R. B. Boddington, Esq. From 1852 to 1858 inclusive, we have those taken by the late Judge Herbert, of Rocklands, near Ross, and from January 1859, to the present time, December 31st, 1902, my own are available. Till 1864 (August), these were taken at "Friends' Place" (170 feet), Market Place, Ross, and since then at my present residence, "The Graig," 213 feet above sea level. There are also several other records which will be found on reference to our *Transactions* (1868, page 149), and some subsequent years. After a long and careful scrutiny of these, my opinion coincides with one formed by Mr. Lawson, an astronomer and rainfall observer who resided in Hereford in the thirties, that the average fall over central Herefordshire is approximately thirty inches. My own averages for 1867 to 1897 inclusive, being exactly that amount, those of three stations showing for 1820-1889 (70 years) 30·4, and from 1840 to 1889 (50 years) 30·1 inches.

As Regards the Eighteen Years 1800—1817.

The late Mr. G. J. Symons, F.R.S., the great authority on British Rainfall, in his annual volume for 1891 published a chart showing the Fluctuations of annual rainfall from 1726 to 1899 inclusive, and from this it appears that every year from 1800 to 1814 was below the average amount of fall, 1803 and 1805 being especially dry years.

An old farmer told the present writer that the first decade of the nineteenth century was specially unfavourable for farming pursuits.

Two months, viz., July, 1800, and September, 1804, appear to have been rainless. The only other months in the century with less than ·10 inch (one tenth) being—

February,	1894 ...	·01	inch
June,	1826 ...	·03	,,
February,	1895 ...	·04	,,
March,	1840 ...	·05	,,
Sept.,	1865 ...	·07	,,
August,	1818 ...	·10	,,

and under ·30

May,	1844 ...	·18	inch
,,	1896 ...	·18	,,
April,	1893 ...	·20	,,
March,	1893 ...	·21	,,
October,	1809 ...	·23	,,
March,	1852 ...	·23	,,
February,	1896 ...	·24	,,
January,	1898 ...	·28	,,
,,	1855 ...	·29	,,

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As a contrast, and showing the monthly variation, the following very wet months may be noticed :—

1852, November	9·48	+ 6·1	above average
1888, „	8·17	+ 5·3	„ „
1872, July.....	7·74	+ 4·9	„ „
1842, November	7·38	+ 4·5	„ „
1876, December	7·04	+ 4·4	„ „
1834, July	7·49	+ 4·7	„ „
1878, August	7·96	+ 5·3	„ „
1833, February	6·86	+ 4·7	„ „
1900, „	6·42	+ 4·3	„ „

The following tables show the yearly totals for different decades from 1818.

			Difference from average.	Percentage of ditto.
1818 to 1827 ...	28·443	inches	— 1·56 inches per year	95
1828 to 1837 ...	31·136	„	+ 1·14 „ „ „	104
1838 to 1847 ...	32·018	„	+ 2·02 „ „ „	107
1848 to 1857 ...	28·968	„	— 1·03 „ „ „	96
1858 to 1867 ...	27·269	„	— 2·73 „ „ „	91
1868 to 1877 ...	31·232	„	+ 1·23 „ „ „	104
1878 to 1887 ...	31·842	„	+ 1·84 „ „ „	106
1888 to 1897 ...	27·017	„	— 2·98 „ „ „	90
Average of 80 years	29·74	„	— 0·26 „ „ „	98

Decades ending with 9.

Ross		Orleton near Tenbury	Thirty years average for Ross and Neighbourhood.
1820-9 ...	29·7	28·6	1830-59 = 30·2
1830-9 ..	32·1	28·4	Ross.
1840-9 ...	31·0	28·8	1860-89 = 30·6
1850-9 ...	27·6	30·9	1870-99* = 29·5
1860·9 ...	29·0	33·3	* This is effected by recent drought.
1870 9 ...	31·7	30·3	
1880-9 ...	31·2	26·4	
Average 80 years	29·75	29·52 for 70 years	

In these tables one thing is very clear, that the last 16 years have been extraordinarily dry.

		Percentage.
Thus from 1821 to 1837—17 years average,	30·55 in.	... 102
1838 to 1853—16 „ „	31·68 „	... 106
1854 to 1870—17 „ „	26·97 „	... 90
1871 to 1886—16 „ „	32·86 „	... 109
1887 to 1902—16 „ „	26·36 „	... 88

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Thus taking 30·00 inches for 100, the last 16 years have been 12 per cent. below the ordinary amount of fall.

Again the average for 1872 to 1886 being 33·09 inches per year, it is equivalent to 110 per cent., or 10 per cent. above average.

The decade 1890-1899 averaged 25·61 inches, and the eight years ending 1899 averaged 25·00 inches.

The total deficiency from January, 1887, to December 31, 1902, as compared with the rate of fall for the 15 years immediately preceding is as nearly as possible 108 inches, or nine feet !

What does this mean if we suppose that the whole of the drainage area of the river Wye (1,609 square miles) was equally affected ?

We know that in the upper districts of the river the rainfall is much heavier than it is in Herefordshire, so that if we assume that the deficiency has been equally great over the whole area, we shall probably be under-estimating the total amount of it. The volume of water which would be required to make up the shortage is really immense. For every inch of rain water that falls on an acre of surface the amount is equal to 100·993 tons (or roughly 101 tons) per acre.

A simple calculation will prove that the total deficiency amounts to 11,232 million tons, or to very nearly $2\frac{3}{4}$ cubic miles of water, or $2\frac{1}{2}$ billion gallons. This would fill a ship canal 289 miles long, 1 mile wide, and 50 feet deep; or 2,312 miles long, 220 yards wide, and 50 feet deep; or 400 miles long, 1,320 ($\frac{3}{4}$ mile) yards wide, and 48·27 feet deep.

If the catchment basin of the river Severn is included, it would make the amount about $3\frac{1}{2}$ times more than above stated. In the latter case it would furnish enough to supply 40 gallons per day to each person of the six million inhabitants of London for use (or waste) for rather more than a century.

It may be interesting to enquire now whether this extraordinary deficiency has affected any particular portion of the year, or whether it has been more noticeable in certain months or seasons than in others.

I find that all the months have contributed to the general deficiency except December, which singularly enough shows a slight excess in the dry period. This, however, is more than accounted for by the heavy falls in 1900 and 1901. In 1900 the fall on December 30th was 2·70 inches, or more than usual for the whole month.

The following is the contribution of each month to the total amount of loss in the sixteen years ended 31st December, 1902 :—

February	21·5	inches
January	17·3	„
September	16·3	„

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June	15·8	inches
July	15·7	,,
November	10·0	,,
August	4·5	,,
October	3·5	,,
April	3·4	,,
May	2·3	,,
March	0·3	,,
	110·6	
Deduct surplus December	2·6	
Total defect as above	108·0	

The following table shows the loss in each quarter of the year :—

Winter (December, January, February)	...	36	inches
Spring (March, April, and May)	...	6	,,
Summer (June, July, and August)	...	36	,,
Autumn (September, October, and November)		30	,,
Total as before		108	

The Summer and Winter therefore, are very similarly affected, being each of them much drier than in the previous 15 years, whilst Spring shows scarcely any difference from normal conditions.

The month of March is specially uniform. The ten years average varying from a maximum in 1858 to 1867, of 2·24 inches, to a minimum in 1878 to 1887, of 1·56 inches.

The wettest March was in 1836, 4·65 inches, and there were only three others above 4 inches, viz. :—

	1851	4·15	inches
	1867	4·12	,,
	1844	4·02	,,
The driest months of March were in	1840	0·05	,,
,, ,,	1893	0·21	,,
,, ,,	1852	0·23	,,
,, ,,	1834	0·54	,,
,, ,,	1820	0·57	,,

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Rainfall, The Graig, Ross.

The following table shows the variation in the different months during the undermentioned periods :—

	Adopted average 1867 to 1897.	20 years, 1867 to 1886.	Wet 16 years, 1871 to 1886.	Dry 16 years, 1887 to 1902.	15 years, 1872 to 1886.	Difference between 1872-1886 and 1887 to 1902.	10 Driest years.	10 Wettest years.	Difference between 1890-1899 and 1871 to 1880.
December ...	2·61	2·72	2·56	2·76	2·60	+ ·16	2·52	2·63	—·11
January	2·88	3·27	3·11	2 08	3·16	—1·08	2·37	2·94	—·57
February ...	2·16	2·69	2·85	1·60	2·94	—1·34	1·43	2·68	—1·25
3 Mo. Winter	7·65	8·68	8·52	6·44	8.70	—2·26	6·32	8·25	—1·93
March	1·89	1·82	1.74	1·75	1·77	—·2	1·46	1·67	—·21
April	1·94	2·01	2.12	1·87	2·08	—·21	1·52	2·21	—·69
May	2·13	2·23	2·15	2·09	2·23	—·14	2·01	2·04	—·3
Spring	5·96	6·06	6·01	5·71	6·08	—·37	4·99	5·92	—·93
June	2·18	2·36	2·77	1·82	2·81	—·99	1·92	2·66	—·74
July	2·83	2·94	3·31	2·27	3·25	1·08	2·co	3·64	—1·64
August	2·64	2·66	2·81	2·56	2·84	—·28	2·60	3·15	—·55
Summer	7·65	7.96	8·89	6·65	8·90	—2·25	6·52	9·45	—2·93
September...	2 91	3·27	3·23	1·98	3·00	1·02	2·23	3·57	—1·34
October	2·96	3·03	3 14	2 96	3·18	—·22	3·17	3·03	+·14
November ...	2·87	2·86	3·07	2·61	3·23	—·62	2·38	3 07	—·69
Autumn	8·74.	9·16	9·44	7·55	9·41	—1·86	7·78	9·67	—1·89
Total Year...	30·00	31·86	32 86	26·35	33·09	—6·74	25·61	33·29	—7·68

It must not be supposed, however, that the last 16 years have been uniformly dry, or that the previous 15 were uniformly wet, the fact being that from 1872 to 1886, there were ten years above and five below average, and in the last 16 there have been 11 below, against 5 above.

	Wet Years.			Dry Years.
Thus—1872	was + 11·48	inches	...	1887 — 7·43
1873	,, — 2·51	,,	...	1888 + 3·01
1874	,, — 4·02	,,	...	1889 — 2·09
1875	,, + 8·57	,,	...	1890 — 7·47

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	Wet Years.					Dry Years.		
Thus—	1876	was	+	6·30	inches ...	1891	+	3·57
	1877	„	+	0·62	„ ...	1892	—	7·19
	1878	„	+	5·38	„ ...	1893	—	9·87
	1879	„	+	2·13	„ ...	1894	+	2·63
						1895	—	4·04
	1880	„	+	5·49	„ ...	1896	—	8·89
	1881	„	—	1·17	„ ...	1897	+	0·51
	1882	„	+	8·40	„ ...	1898	—	8·58
	1883	„	+	1·52	„ ...	1899	—	4·56
	1884	„	—	3·08	„ ...	1900	+	3·78
	1885	„	—	1·76	„ ...	1901	—	6·55
	1886	„	+	8·94	„ ...	1902	—	6·21

The excess in the 15 years, 1872-1886, amounted in the aggregate to 46·29 inches.

The deficiency in the next 16 years, 1887-1902, was 59·38 inches, or nearly 13 inches more.

The ten wettest years of the first period averaged 35·88 inches, or 5·88 inches per year.

The ten driest years of the second period, averaged 22·92 inches, or 7·08 inches per year, so that the dry cycle was not only one year longer than the wet one, but showed a greater departure from the average.

During the century, the years characterized by wet summers and consequently unfavourable harvests were as below, nearly in order of excess :—

1879. Very cold and wet throughout.

1816. Very cold, corn out till December.

1860. Very cold June and August. July cold, harvest late.

1821. Not cold, but wet in July, August, and September.

1839. With the exception of August (which had about an average fall), every month from July 1st to March 1st, in following year, was very wet, especially July, September, and November. Much hay was swept away by floods.

1880. Very wet July, but extremely fine August.

1886. Very wet, scarcely any grain gathered and much uncut September 10th, but very fine and dry afterwards till end of October.

1891. Very wet August and October, but fine in September for late harvest.

1894. Wet from July 22nd to August 25th, five weeks, nearly 5 inches, and again from September 22nd to November 14th, nearly 11 inches.

But after all, really bad harvests only occur three or four times in a century. On the whole, for our soil, excess of rain is more injurious than deficiency.

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The most severe droughts were probably those of 1818 (in this year scarcely any rain fell from middle of May till September 4th) :—1825 and 1826, when in Herefordshire and Worcestershire the want of rain was very severely felt, and the rivers and streams were supposed to have been unprecedentedly low, both summers having been extremely hot; trees had to be lopped in Worcestershire to feed the animals. In 1844, there was almost an absence of rain from the middle of March to the end of June, so that the spring corn, especially barley, scarcely grew and yielded very little indeed. Hay, which had been abundant in the previous year, advanced in consequence to £8 per ton. This is still remembered by many persons.

Five inch Rain Gauge, 1 foot above ground,

West Longtitude, 2°35; North Latitude, 51°55.

Rainfall—Observer, H. Southall; 1859 to 1864, Market Place Ross, 170 feet; 1865 to 1902, The Graig, 213 feet above sea level.

	January.	February.	March.	April.	May.	June.	July.	August.	Sept.	October.	November	December	Year.	1867—1897. Difference Inches.	Per cent.
1859	1·45	1·34	2·11	2·58	1·80	2·05	1·70	2.90	3·33	2·40	3·77	3·21	28·64	— 1·36	96
1860	3·34	·70	2·05	1·24	2·47	5·67	1.85	4·14	2·29	1·83	2·70	4·86	33·14	+ 3·14	110
1861	·75	3·25	2·26	·63	1·41	2·02	4·78	1·09	1·80	2·03	3·00	2·87	25·89	— 4·11	86
1862	2·40	·47	3·69	2·50	4·33	2·81	1·56	1·44	4·29	3·45	·82	1·70	29·46	— 0·54	98
1863	3·51	·73	1·14	1·46	·88	4·66	·50	2·70	2·52	4·27	2·14	·76	25·27	— 4·73	84
1864	1·62	1·08	2·80	1·02	·71	1·29	·75	·75	2·69	2·24	2·17	2·10	19·22	—10·78	64
1865	3·51	2·43	·96	·65	2·80	1·44	2·44	3·23	·07	4·98	3·90	2·15	28·56	— 1·44	95
1866	3·91	2·18	2·36	1·94	·86	2·54	·90	3·48	5·91	2·41	1·25	1·63	29·37	— 0·63	98
1867	4·37	1·78	4·12	2·46	2·94	·94	3·68	1·91	1·84	2·89	1·24	·93	29·10	— 0·90	97
1868	3·18	1·36	1·62	2·21	1·63	·33	.41	4·27	4·42	1·76	1·84	6·01	29·04	— 0·96	97
1869	6·16	3·15	1·56	·90	4·43	·95	·54	·91	5·85	1.98	1·78	5·04	33·25	+ 3·25	111
Avr 10ys	32·75	1·713	2·256	1·501	2·246	2·265	1·741	2·392	3·168	2·784	2·084	2·805	28·23	— 1·77	94
1870	2·06	1·96	1·36	·63	1·22	·55	1·16	1·17	1·65	3·72	3·25	1·45	20·18	— 9·82	67
1871	2·26	1.65	1·24	2·72	·92	2·28	4·20	2·35	6·62	2·56	·74	1·87	29·41	— 0·59	98
1872	4·25	3·58	2·11	2·61	1·82	3·25	7·74	1·74	1·81	3·11	5·52	3·94	41·48	+11·48	138
1873	4·00	1·34	3.39	·89	2·00	3·78	2·35	3·50	1·49	2·12	2·11	·52	27·49	— 2·51	92
1874	3·21	2·88	·89	1·66	·63	1·30	1·47	2·17	4·29	2·32	2·20	2·96	25·98	— 4·02	87
1875	4·61	2.35	1·15	1·73	2·43	2·62	6·76	1·73	2·99	5·51	4·94	1·75	38·57	+ 8·57	129
1876	2·12	2·43	3·31	2·42	·64	·67	1·28	2·47	6·86	2·44	4·62	7·04	36·30	+ 6·30	121
1877	4·39	1·48	1·58	2·83	2·51	1·55	2·85	3·53	2·48	2·04	3·92	1·46	30·62	+ 0·62	102
1878	1·10	2·22	1·04	3·69	4·80	2·44	1·02	7 96	2·07	3·64	2·93	2·47	35·38	+ 5·38	118
1879	2·85	3·95	·75	1·98	2·62	5·47	2·80	5·78	3·43	·83	·76	·91	32·13	+ 2·13	107
Avr 10ys	3·085	2·384	1·682	2·116	1·959	2·391	3·163	3·240	3·369	2.829	3·099	2·437	31·754	+ 1·75	106

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	January.	February.	March.	April.	May.	June.	July.	August.	Sept.	October.	November	December	Year.	Inches.	Per cent.
1880	·66	4·88	1·24	1·52	2·01	3·23	5·96	·30	3·62	5·75	2·97	3·35	35·49	+ 5·49	118
1881	1·70	3·08	1·87	·57	2·15	2·90	1·53	4·77	1·41	2·73	3·74	2·38	28·83	— 1·17	96
1882	2·99	3·12	1·04	3·49	2·01	2·51	4·63	2.37	3·62	5·80	3·82	3·60	36·40	+ 1·28	128
1883	4·25	4·33	·92	1·11	1·72	4·30	3·27	·81	4·52	2·49	3·16	·64	31·52	+ 1·52	105
1884	3·28	2·66	2·62	1·43	·57	4·05	3·51	2·02	1·24	1·05	1·90	2·59	26·92	— 3·08	90
1885	2·95	4·50	1·44	2·59	2·00	2·33	·31	1·95	3·13	2·75	3·27	1·02	28·24	— 1·76	94
1886	5·10	1·22	3·19	2·72	5·49	1·71	3·27	1·46	2·66	5·18	2·51	4·43	38·94	+ 8·94	130
1887	2·73	.40	1·50	1·21	2·37	·95	1·68	1·95	2·50	2·28	3·00	2·00	22·57	— 7·43	75
1888	·69	1·10	3 84	1·70	1·34	2·72	6·06	2·40	·79	·91	8·17	3·29	33·01	+ 3·01	110
1889	·84	1·29	3·28	5·64	3·81	·41	2·27	2·23	2·06	3·77	1·09	1·22	27·91	— 2·09	93
Avr 10yrs	2·519	2·658	2·094	2·198	2·347	2·511	3·249	2·026	2·495	3·271	3·363	2·452	31·183	+ 1·18	10
1890	3·61	·68	·91	1·01	2·12	1·88	3·33	2·92	1·62	1·25	2·05	1·15	22·53	— 7·47	75
1891	1·91	·01	1·79	1·53	3·73	3·35	1·70	4·90	1·37	6·70	3·02	3.56	33·57	+ 3·57	112
1892	1·90	2·17	·89	·92	1·67	1.91	3·10	2·67	2·36	1·89	2·55	·78	22·81	— 7·19	76
1893	2·30	2·74	·21	·20	1·66	1·08	2·92	1·37	·89	2·09	1·22	3·45	20·13	— 9·87	67
1894	2·73	2·24	1·34	2·16	2·96	1·76	2·60	2·97	3·78	4·96	3·29	1·84	32·63	+ 2·63	109
1895	4·40	·04	2·13	2·60	·43	·93	2·59	2·22	1·01	2·68	4·80	2·13	25·96	— 4·04	86
1896	·37	.24	2·24	·81	·18	2·19	1·08	1·05	5·93	2·85	·70	3·47	21·11	— 8·89	70
1897	2·42	2·19	3·81	2·13	1·24	3·20	1·69	3·92	2·60	1·84	1·87	3·60	30·51	+ 0·51	102
1898	·28	1·19	·60	1·76	3·85	·84	·55	2·86	·46	4·46	1·99	2·58	21·42	— 8·58	71
1899	3.88	2·77	·63	2·13	2·23	2·04	·49	1·06	2·34	2·95	2·30	2·62	25·44	— 4·56	85
Avr 10yrs	2·38(	1·427	1.455	1·325	2·007	1·918	2·005	2·594	2·236	3·167	2·379	2·518	25·611	— 4·39	85
1900	2·97	6·42	1·20	1·06	2·77	1·20	2·68	3·25	·40	4·10	2·18	5·55	33·78	+ 3·78	113
1901	1·52	·99	2·19	2·67	1·21	2·15	2·96	1·45	1·73	1·23	·87	4·48	23·45	— 6·55	78
1902	·78	1·01	1·53	2·32	1·81	2·55	·66	3.73	1·83	3·36	2·64	1·57	23·79	— 6·21	78
Avr 1867 to 1897	2·88	2·16	1·89	1·94	2·13	2·18	2·83	2·64	2·91	2·96	2·87	2·61	30·00	0· 0	100

TEMPERATURE.

As regards Temperature, the following figures will show the comparison of Ross and Greenwich for undermentioned dates :—

Decades.	Ross. Minimum Temperature. Degrees.	Greenwich. Ditto. Degrees.	Ross, Compared with Greenwich. Degrees.
1861-1870 ...	41·72 ...	42·41 ...	—0·69
1871-1880 ...	41·28 ...	42·21 ...	—0·93
1881-1890 ...	41·20 ...	41·64 ...	—0·44
1891-1900 ...	41·79 ...	42·67 ...	—0·88
1861-1900 ...	41·50 ...	42·23 ...	—0·73

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Maximum or Day Temperature.

1861-1870	57·96	58·62	—0·66
1871-1880	56·80	57·79	—0·99
1881-1890	56·50	57·17	—0·67
1891-1900	57·58	58·22	—0·64
40 years 1861-1900	57·21	57·95	—0·74

Combined Maximum and Minimum.

1861-1900	49·35	50·05	—0 70

It appears by these figures that Ross is about three quarters of a degree cooler than Greenwich, and that the comparison is nearly uniform throughout the forty years. On next pages an analysis of the different months will show how this arises.

Period Forty Years, 1861 to 1900 inclusive.

Minimum.	Ross.	Greenwich.	Ross, Compared with Greenwich.
January	32·93	33·53	—0·60
February	34·33	34·71	—0·38
March	34·56	34·91	—0·35
April	38·96	39·18	—0·22
May	43·11	43·52	—0·41
June	49·14	49·89	—0·75
July	52·21	53·29	—1·08
August	51·76	52·99	—1·23
September	47·94	49·29	—1·35
October	41·87	42·88	—1·01
November	37·31	37·93	—0·62
December	33·86	34·77	— ·91
Year	41.50	42·24	—0·74

Average Period Forty Years, 1861—1900.

Maximum.	Ross.	Greenwich.	Maximum Temperature.
January	43.29	42·80	+0·49
February	46·05	45·59	+0·46
March	49·65	49·69	—0·04
April	57·11	57.56	—0·45
May	63·15	63·99	—0·84
June	69·50	70·86	—1·36
July	72·35	74·29	—1·94
August	70·84	72·84	—2·00
September	65·36	67·48	—2·12
October	56·06	57·26	—1·20
November	48·70	48·94	—0·24
December	44·38	44·06	+0·32
Year	57·20	57·95	—0·75

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This table shows that for the winter months of December, January, and February, Ross is only one-tenth of a degree colder than London, the days being about half a degree warmer and the nights rather more than that amount colder, whereas in the five summer months (June to October) in London the day or maximum temperature is 1·73 warmer and the night or minimum temperature 1·08 warmer than at Ross. It does not seem from the figures above quoted that there is any reason to suppose that any material alteration in the climate of England during the last century has taken place, nor that there is any sign of a material reduction in the volume of water deposited as rain. It is probable, however, that centuries ago when large forests existed in England and there were large tracts of undrained land, the effect may have been to intensify some of our present characteristics; that there were occasionally more severe frosts, and those probably of longer continuance than at present, and on the other hand the fact that the vine was more successfully cultivated as well as the historical evidence of greater heat in summer seems to indicate that the range of temperature is somewhat less now than formerly. But it must be recollected that the difference in temperature between the coldest and hottest year of the century was not more than about six degrees, and that this margin, small as it is, is sufficient to affect very materially the successful cultivation of many of our principal crops; the amount of degrees of heat necessary to bring to perfection many of our cereals having been ascertained with considerable accuracy.

The worst of it is that we are so slow to profit by experience, and do not in many cases make provision to counteract or minimise the bad effects of different phenomena which are by no means infrequent in occurrence.

I have not time to touch here upon many theories as to the weather, which investigation has clearly shown to be based on incorrect reasoning.

As regards the influence of the moon, especially at its periodical changes, upon the weather, the only thing I believe which is clearly proved is that the weather, and the aspect to us of the moon, are both constantly changing. It has been proved also beyond question that gales are not specially frequent at the Equinoxes. Many of our weather proverbs have enough truth in them to be worth remembering, but are very untrustworthy. Another question is still *sub judice*, and that is the influence of sunspots upon our seasons. No satisfactory evidence has, however, yet been adduced for believing that the interval of about eleven years between the maximum and minimum periods is correspondingly followed by definite or distinct types of weather.

I think there is no doubt that the severity or mildness of the Arctic Winters does directly affect us in England.

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Possibly after a warm Winter in high latitudes, the ice packs may be somewhat broken up, and icebergs drifting to the southward may perceptibly cool the regions over which they pass, and thus produce a converse effect in our zone.

It is known that very often when we have a cold season they have the reverse and *vice versâ*.

Again in certain years, often some length of time apart, there are brilliant exhibitions of the Aurora Borealis in our islands, showing magnetic activity.

These are all interesting questions.

It is sometimes said that Meteorology is not, like Astronomy, an exact science. Nevertheless every year is adding to our knowledge of atmospheric phenomena, and if we cannot at present definitely or exactly foretell the coming of a cyclone or hurricane, a famine producing drought, or frightful gales or floods, we know much more than we did only a few years ago of the conditions under which they are developed and the limits of their duration and intensity.

I fear I have already exceeded the proper limits of this paper.

There have been interesting and somewhat remarkable meteorological experiences of late to which I have not had time to allude.

Possibly in a future paper I may deal with some of these, with your permission.

I conclude with the following quotation from the poet Young:

> "Look Nature through, 'tis revolution all;
> All change; no death. Day follows night, and night
> The dying day; stars rise, and set, and rise;
> Earth takes th' example. See, the summer gay,
> With her green chaplet and ambrosial flowers,
> Droops into pallid autumn; winter gray,
> Horrid with frost, and turbulent with storm,
> Blows autumn and his golden fruits away:
> Then melts into the spring; soft spring, with breath
> Favonian from warm chambers of the south,
> Recalls the first. All to re-flourish fades;
> As in a wheel, all sink to re-ascend;
> Emblems of man, who passes, not expires."

The difference between the rainfall at Ross and that over the area of the Birmingham Water Supply from Wales is given in the following Tables:—

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Tables of Rainfall at Ross compared with the Rainfall Birmingham Water Supply: from Wales.

Rainfall at Nantgwillt (old gauge), 768 feet above sea level.

	Nantgwillt.	Graig Ross.	Ross less than Nantgwillt.	Days in which ·01 fell. Nantgwlt	Ross.	Difference
1871	52·68	29·41	—23·27	179	147	—32
1872	93·86	41·48	—52·38	253	223	—30
1873	53·30	27·49	—25·81	232	184	—48
1874	63·09	25·98	—37·11	217	184	—33
1875	65·31	38·57	—26·74	210	186	—24
1876	69·03	36·30	—32.73	210	195	—15
1877	76·13	30·62	—45·51	250	204	—46
1878	63·76	35·38	—28·38	211	193	—18
1879	66·13	32·13	—28·06	212	190	—22
1880	62·77	35·49	—27·28	201	168	—33
Decade 71–80	66 006	33·285	—32·722	217·5	187 4	—30·1
1881	61.92	28·83	—33·09	209	184	—25
1882	78·77	38·40	—40·37	239	221	—18
1883	70·55	31·52	—39·03	230	197	—33
1884	59·94	26·92	—33·02	202	179	—23
1885	62·82	28·24	—34·58	191	204	+13
1886	74·69	38·94	—35·75	203	213	+10
1887	44·16	22·57	—21·59	154	163	+ 9
1888	58·84	33·01	—25·83	201	209	+ 8
1889	53·58	27·91	—25.67	220	187	—33
1890	54·69	22·53	—32·16	247	193	—54
10 years	61·996	29·887	—32·109	209·6	195·0	—14·6
1891	69·53	33·57	—35·96	232	200	—32
1892	43·43	22·81	—20·62	228	166	—62
1893	53 88	20·13	—33·75	218	165	—53
1894	67·32	32·63	—34·69	253	208	—45
1895	50·41	25·96	—24·45	204	159	—45
1896	53·61	21·11	—32·50	210	166	—44
1897	60·04	30·51	—29·53	216	188	—28
1898	53·82	21·42	—32·40	208	157	—51
1899	61·50	25·44	—36·06	190	171	—19
1900	58·90	33·78	—25·12	209	195	—14
10 years.	57·24	26·736	—30·508	216·8	177.5	—39·3
1901	52·53	23·45	—29·08	203	176	—27
1902		23·79			185	

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Rainfall at Cwm Elan (Birmingham Water Company) Gauges Rhayader District.

Height in feet	768	764	1545	1250	1710	1585	1200		
	Nant-gwillt old gauge	Nant-gwillt new gauge	Nant y Car	Claer-wen	Prydle-lau	Bwlch-yi hen-dre	Aber-gwyngy	Average 7 stations	Percentage of 10 years average
1892	43·43	45·41	64·50	50·80	56·90	54·00	49·25	52·04	86
1893	53·88	56·71	73·50	54·10	61·60	60·15	58·40	59·76	99
1894	67·32	71·83	87·60	62·00	77·35	70·30	67·65	72·01	119
1895	50·41	53·36	65·15	46·65	57·25	55·55	45·95	53·47	88
1896	53·61	56·59	78·85	62·05	62·20	65·50	58·55	62·48	103
1897	60·04	66·13	90·45	62·95	63·13	62·58	58·35	66·23	110
1898	53·82	56·49	80·26	53 90	51·05	58·60	57·20	58·76	97
1899	61·50	64·55	78·35	60·95	62·35	57·40	44·49	61·37	101
1900	58·90	60·54	76·00	63.50	62·20	62·40	60·15	63·38	105
1901	52·53	55·04	62·50	55·70	55·90	56·60	58·30	56·65	94
10 years.	55·544	58·665	75·716	57·260	60·993	60·308	55·829	60·615	100

This Rain Gauge was not started till 1895.

	Tyrmynydd, 832 feet.
1895	52·26
1896	56·98
1897	63·38
1898	55·30
1899	63·77
1900	60·63
1901	54 23
Total	406·55
Average	58·08

Comparison between Ross and Rhayader for wet period 1872—1886, and following dry period, 1887—1901.

	Nantgwillt.	Ross.	Difference.
1872—86 rainfall per year	67·74 inches	33 09	—34·65
1887—1901 „ „	55·75 „	26·45	—29·30
1872—1901 „ „	61·74 „	29·77	—31·97
1872—86 compared with 30 years average... ...	110%	111%	+ 1%
1887—1901 „ „	90%	89%	— 1%
Average	100%	100%	— 0

Dry period compared with wet one—11·99 inches—6,64.

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Nantgwillt having throughout rather more than twice the rainfall at Ross.

Nant y car was the wettest of the eight Welsh stations (1892 to 1901) with a maximum of 90·45 inches in 1897 and a minimum of 62·50 inches in 1901.

The wettest year was the same in Wales as in Herefordshire when Nantgwilt had 93·86 inches and Ross had 41·48 inches.

The following Rainfall for 1902 is taken from "British Rainfall," 1902, compiled by H. Sowerby Wallis and Hugh Robert Mill, D.Sc, LL.D. :—

RAINFALL IN 1902.

RADNORSHIRE.

	Height above Sea Level.	Depth of Rain, inches.	Days on which ·01 or more fell.
Rhayader (Nant y Car), *M ...	1,545	56 25	—
„ Tyrmynydd	832	48·71	211
„ Nantgwillt (Old Gauge)...	768	47·31	208
„ „ (New Gauge)...	764	48·54	208
„ Bwlchyrhendre, *M	1,585	52·80	—
„ Claerwen	1,250	50·50	185
„ Pryddellau, *M.....	1,710	52·20	—
„ Aberygwyngy	1,200	51·25	189

* The letter M indicates that the gauge is read only on the first of each month.

In each case the diameter of the rain gauge is 5 inches, and the gauge is one foot above the ground.

The average Rainfall for Nantgwillt for the ten years, 1892 to 1901 is 55·5 inches.

The average Rainfall for Ross (The Graig) for the ten years, 1892 to 1901, is 25·7 inches.

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RAINFALL.—TABLE OF COMPARISON, NANTGWILLT AND ROSS, 1902.

1902.	Nantgwillt.	Ross.
January	3·57	0·78
February	2·24	1·01
March	3·55	1·53
April	2·48	2·32
May	3·89	1·83
June	2·95	2·55
July	3·27	0·66
August	5·27	3·73
September	3·37	1·81
October	4·87	3·36
November	5·21	2·64
December	6·64	1·57
Total	47·31	23·79

In April and June the rainfall was nearly equal.

In January and July there was nearly five times as much rainfall as at Ross.

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Woolhope Naturalists' Field Club.

FIRST FIELD MEETING, TUESDAY, MAY 27TH, 1902.

THE WOOLHOPE VALLEY.

FIFTY years ago on May 18th, 1852, the Woolhope Club held their first Field Meeting in the Woolhope Valley. The geological report of this excursion was read on 20th July by Mr. M. J. Scobie, F.G.S., the earliest Honorary Secretary of the Club, and one of its founders; the manuscript was recently presented to the Club by his son, Mr. M. J. G. Scobie, and published in *Transactions* 1894, pp. 260 to 263.

During the fifty years of its existence the Woolhope Club has paid several visits to the locality, and papers dealing with the features of separate localities have been published. With the view of placing any new geological visitor in familiarity with the district, the following summary of References in the *Transactions* of the Club is now given, including a few references to outlying neighbouring places :—

REFERENCES TO THE GEOLOGY OF THE WOOLHOPE AND NEIGHBOURING DISTRICTS.

Transactions, 1866, p. 6. Geological notes on the District of Woolhope, by Rev. W. S. Symonds. For a later revision of these notes, with additions, see Flora of Herefordshire, pp. ix. to xiii.

„ 1867, p. 135. Upper Silurian Fossils, by Rev. Robert Dixon, with three plates of Fossil Sketches.

„ „ p. 170. Geology of the Woolhope District, by Rev. Robert Dixon.

„ 1868, p 145. Palæontological Notes on the Silurian Strata in the Woolhope Valley, by Rev. P. B. Brodie. Discoveries of characteristic May Hill Fossils in Haugh Wood, just above Scutterdine.

„ 1868, p. 153. Field Meeting, August 25th, Woolhope to Sollers Hope.

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Transactions, 1870, p. 163. The Discovery of the Eurypterus Brodiei, by Rev. P. B. Brodie, at Perton, near Stoke Edith, is chronicled.

„ 1870, p. 167. The Silurian Rocks of Hagley Park, by Hugh Strickland, F.R.S., F.G.S.

„ 1870, between pp. 170 and 171. Sections from Hagley Park to Backbury Hill, Woolhope District.

„ 1870, p. 173. On the Drift in the neighbourhood of the Woolhope Valley, by Rev. F. Merewether.

„ 1870, p. 273. Passage Beds between the Upper Silurian at Hagley, Perton, Tarrington, and Ledbury, by Rev. P. B. Brodie, with illustrations in Fossil Sketch No. 7, &c., of Eurypterus Brodiei, found at Perton, between pages 276 and 277. For Section at Perton see page 275.

„ 1876, pp. 255 to 258. Upheaval of the earth's crust and denudation in the Woolhope Valley (portion of the address of the President, Dr. T. A. Chapman).

„ 1877, p. 18. Geological Drifts of the Neighbourhood, by Rev. F. Merewether.

„ 1883, p. 39. The Ludlow and Aymestrey Rocks of the Silurian System, by Geo. H. Piper, F.G.S.

„ 1884, p. 136. The Passage Beds of the Old Red Sandstone at Ledbury, by George H. Piper, F.G.S.

„ 1886, p. 53. Aymestrey Limestone exposure in the Perton Lane. Fossils and nodules of Lingula Lewisii, &c.

„ 1891, p. 160. The Geology of the Woolhope District, by Rev. J. D. La Touche.

„ 1891, p. 164. The Geology of the Woolhope District, by Geo. H. Piper, with coloured Geological Plan of the District, and a Section.

„ 1894, p. 260. The Geological Report of the First Field Meeting on May 18th, 1852, by M. J. Scobie, F.G.S.

„ 1897, p. 310. The Passage Beds at Ledbury (in greater detail than in the previous reference to *Transactions*, 1884, p. 136).

„ 1900, p. 29. Quarry of Aymestrey Limestone in Perton Lane.

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LOCALITIES WHERE THE ROCKS ARE EXPOSED AND WHERE FOSSILS MAY BE FOUND.

In pursuance of facilitating geological students in their researches and investigations of the various strata, the following memoranda are presented, enlarged and annotated, upon the basis of the Report in *Transactions*, 1867, p. 186 :—

DOWNTON SANDSTONE.

Locality.	Ordnance Survey Map, Herefordshire. Sheet on scale of 6 inches to one mile.	References and Remarks.
HAGLEY	34 S.W. ¼ mile from Lugwardine Church	*Transactions*, 1867, p. 180. ,, 1868, p. 145. ,, 1870, p. 167. For section from Hagley Park through Bartestre to Backbury Hill, see *Transactions*, 1870, between pages 170 and 171. Portions of Upper Ludlow and of Downton Sandstone may be seen in the eastern wall of Ledbury Church, 1883, p. 42; also in the walls of Mordiford Church.
PRIORS FROME..	34 S.E. 1 mile north of Mordiford Church	The Passage Beds all along the lane from Old Sufton to Dormington are well worth studying. See a few stones in the wall near the Pigeon House, Old Sufton. *Transactions*, 1870, p. 277. At Priors Court Farm there is a small exposure of Sandstone showing about 2 feet of divided beds of Yellow Sandstone with Carbonaceous remains resting on the Upper Ludlow, but no "Olive Shales."
PERTON	34 S.E. 1½ miles from Stoke Edith Station	In a small quarry at the bottom of Perton lane the beds may be clearly traced resting upon the Upper Ludlow Shaley Sandstones. *Transactions*, 1868, p. 145. In the Passage Beds, in a small section exposed at Perton, remains of Pterygotus and Eurypterus abound, intermingled with fragments of vegetable matter, including small preserved seed vessels, a few small semi valves, and a coral. *Transactions*, 1870, p. 275. At Perton the Rev. P. B. Brodie found Eurypterus Brodiei and Pterygotus Banksii. For description and sketch of the Eurypterus, see opposite page 276 Fossil Sketch No. 7. A section at Perton will be found on p. 275. See also *Transactions*, 1886, p. 53.

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DOWNTON SANDSTONE—CONTINUED.

LOCALITY.	ORDNANCE SURVEY MAP, HEREFORDSHIRE. SHEET ON SCALE OF 6 INCHES TO ONE MILE.	REFERENCES AND REMARKS.
TARRINGTON ..	34 S.E. 1 mile from Stoke Edith Station	A quarry beyond the Church at the foot of the hill; it would repay further investigation (Symonds).
MUCH MARCLE..	41 S.W. 4 miles S.E. of Woolhope	Close by the 7th milestone on the old road from Ross to Ledbury. Doubtless also in many other places on this side of the district the Bone bed may be found.
GAMAGE FORD...	47 N.W. 6 miles E. of Fawley Station. 6 miles from Ledbury and 6 miles from Ross, about 1 mile south of Homme House, in Much Marcle	In the short lane to Lynedown, about 1-6th of a mile west of Gamage Ford, the Passage Beds may be well traced. The Bone bed is very thick here.

UPPER LUDLOW.

SHUCKNALL HILL	34 N.E. 2 miles E. from Withington Station.	Several exposures on the side of the lane turning up by Shucknall Farm. Many fossils may be found in the large quarry. On the north side of the hill there is a quarry with dislocations especially deserving notice.
OLD SUFTON ..	40 N.E. 1 mile N. by E. of Mordiford.	Beds dipping down and overhanging the road apparently to a dangerous degree.
PRIORS COURT...	34 S.E. ½ mile S. of Dormington.	Many fossils. Orthoceras bullatum. O. Ibex. Orthonata amygdalina.
DORMINGTON ..	34 S.E. 5 miles E. of Hereford.	Chonetes lata abundant here with shelly substance perfect. (Phillips).
PERTON	34 S.E. 1½ mile from Stoke Edith Station.	The series is well seen in Perton lane, going up the hill.
DURLOW COMMON	35 S.W. 2½ miles S.E. from Stoke Edith Station. ½ mile S. of Eastwood Oak.	Very good sections up the hill by Hazle and the Hill Barn.
BODENHAM .	47 N.W. 1 mile S. of Much Marcle.	Numerous fossils.
GORSTLEY COMMON	47 S.E. 6 miles E. by N. from Ross.	The Upper Beds well exhibited.
GAMAGE FORD...	47 N.W. 6 miles E. of Fawley Station.	Beds rich in fossils in the lane leading to Lynedown, 1-6th of a mile westwards.

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UPPER LUDLOW—CONTINUED.

LOCALITY.	ORDNANCE SURVEY MAP, HEREFORDSHIRE. SHEET ON SCALE OF INCHES TO ONE MILE.	REMARKS AND REFERENCES.
YATTON FARM...	47 N.W. 5 miles E. of Fawley Station, 1 mile S.W. of Gamage Ford.	Here, and at many other points in the anticlinal, the transition is well exhibited.
OLDBURY ...	41 S.W. 5 miles N.E. from Fawley Station.	Several good exposures in the lanes.
FOWNHOPE ...	40 S.E. 3 miles from Holme Lacy Station.	Curious dislocations on the road to Nupend.
AYMESTREY ROCK.		
MARIANS' HILL..	40 N.E. Immediately above Mordiford.	Fair exposures.
BACKBURY HILL	40 N.E. / 34 S.E. } 1 mile south of Dormington	Many fossils in the *débris*; some beds entirely composed of Rhynconella Wilsoni.
PUTLEY COCKSHOOT }	41 N.W. 2½ miles S.W. of Ashperton Station.	Fine old quarry.
THE WONDER }	1 mile from Putley.	Good quarry.
SLEEVES OAK ..	41 S.W. 2 miles S.E. of Woolhope.	Fine escarpment. See *Transactions*, 1868, p. 155. Here were gathered Brachopods, Rhynconella nucula, and R. didyma, the former in profusion; Lingula Lewisii, and Chonetes lævigata. Here the jointed structure of the rock is very remarkable. Joints in three directions were observed on the Woolhope side.
RIDGE HILL	41 S.W. 3 miles S.S.E. of Woolhope.	Good quarry on the east side of the hill.
BODENHAM ...	47 N.W. 1 mile S. of Much Marcle.	Pentamerus Knightii has been found here.
POUND	40 N.E. 6 miles E. from Ross. 1 mile E. of Mordiford.	Very fine quarry. On Sheet 40, S.E., in Sollers Hope, about ½ mile S.S.E. of the Church, there is marked an old quarry at "The Pounds." Query? Is this the quarry and locality referred to?
BUCKENHILL ...	40 S.E. 1½ miles E. by S. of Fownhope	Some exposures.

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AYMESTREY ROCK—CONTINUED.

LOCALITY.	ORDNANCE SURVEY MAP, HEREFORDSHIRE. SHEET ON SCALE OF 6 INCHES TO ONE MILE.	REMARKS AND REFERENCES.
FOWNHOPE ...	40 S.E. 3 miles from Holme Lacy Station.	Good quarry by Nupend Mill.
CHERRY HILL...	40 S.E. 2 miles from Holme Lacy Station.	Very highly inclined beds.
SHUCKNALL HILL	34 N.E. 2 miles E. of Withington Station.	Large quarries. Some beds very fossiliferous.
PERTON	34 S.E. 1 mile S. of Stoke Edith Station.	Large Quarry. (*Transactions* 1886, p. 53).

LOWER LUDLOW.

BACKBURY HILL	40 N.E., 34 S.E. 1 mile S. of Dormington.	Graptolites have been found in a quarry under the hill. There is also an exposure in a lane by Clouds.
WOOTTON ...	34 S.E. 1 mile S.E. of Dormington.	The lane cuttings about here should be examined.
WINSLOW MILL	41 N.W. 1 mile E. by N. of Woolhope.	Exposure in the road up to Hooper's Oak. Hooper's Oak is on the extreme southern boundary of 41 N.W. under Marcle Hill, one mile south of The Wonder.

WENLOCK LIMESTONE.

DORMINGTON WOOD	34 S.E. 2½ miles S.W. of Stoke Edith Station.	Quarries very rich in the characteristic fossils.
CANWOOD ...	40 N.E. 2 miles S.E. of Dormington Wood.	Old quarries in an opening in the ridge.
WINSLOW MILL.	41 N.W. 1 mile E. by N. of Woolhope.	Beds exposed in the road
HYDE	41 S.W. 1½ miles S.E. of Woolhope, ¼ mile W. of Sleeves' Oak.	Rich little quarry

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WENLOCK LIMESTONE—CONTINUED.

LOCALITY.	ORDNANCE SURVEY MAP, HEREFORDSHIRE. SHEET ON SCALE OF 6 INCHES TO ONE MILE.	REMARKS AND REFERENCES.
LINDELS OR LINDALLS	41 S.W. 1 mile E. from Sollars Hope, ½ mile W. from Oldbury Camp.	Quarries with many fossils. Here the Aymestrey Limestone is interrupted for the distance of nearly a mile, and the two ridges of Wenlock Limestone meet at an acute angle, showing dips in different directions. *Transactions*, 1868, p. 153. Large exposure. Corals and shells abound: — Favosites, Cœnites and Heliolites. Strophomena depressa comes out entire in this prolific spot. S. euglypha is common. Spirifer, two or three kinds; Rhynconella and the ubiquitous Atrypa reticularis. A few Trilobites, chiefly Calymene Blumenbachii and Phacops caudatus, and a great sponge (Stromatopora) were also met with. One peculiarity noticed was that the Limestone here is largely pisolitic like the beds of Inferior Oolite. Professor Phillips noticed this also in the Wenlock Limestone of Malvern.
FOWNHOPE ...	40 S.E. 3 miles from Holme Lacy Station	Long line of exposures on The Common Hill, with abundance of fossils.
	WENLOCK SHALE.	
CHECKLEY COMMON	40 N.E. Under Dormington Wood.	Fossiliferous exposures in some lanes and in the brooks.
WOOLHOPE ...	40 N.E., 40 S.E. 3 miles S.E. from Mordiford.	Exposures in lanes to the south.
NUPEND	40 S.E. 1 mile from Fownhope.	Some exposures on the road towards Rudge End.
	WOOLHOPE LIMESTONE.	
JOANS HILL ...	40 N.E. 2 miles E. of Mordiford.	Slight exposures.
WOOLHOPE ...	40 N.E., 40 S.E. 3 miles S.E. of Mordiford.	Many exposures round the village. The Scar Quarry is worked and used as metalling for the roads. Its situation is about 200 yards east of the Church.
TWILLIS (BETTER KNOWN NOW, 1902, AS STONY HILL)	40 S.E. ½ mile S. of Woolhope Vicarage.	The dips here are remarkable, but on a very small scale. Twillis is on the road to Croose Farm, Hyde Farm, and to Sollers Hope.
WESSINGTON ...	40 S.E. 1 mile S.W. of Woolhope.	Old Quarry.

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WOOLHOPE LIMESTONE—CONTINUED.

LOCALITY.	ORDNANCE SURVEY MAP, HEREFORDSHIRE. SHEET ON SCALE OF 6 INCHES TO ONE MILE.	REMARKS AND REFERENCES.
RUDGE END ...	40 S.E. 1½ mile N.E. of Fownhope.	A small quarry by the road.
LITTLE HOPE (UPPER AND LOWER) SCUTTERDINE	40 N.E. 1 mile E.S.E. of Mordiford.	Rich quarries often worked.

UPPER LLANDOVERY (MAY HILL).

POUND	40 N.E. 1 mile E. of Mordiford.	Cuttings in the lanes in Haugh Wood.
BROADMOOR COMMON	40 N.E. 1 mile W. Woolhope.	Exposures in the road cuttings. See also *Transactions*, 1868, page 156 and 1870, page 175, where, at Foulmires' Farm (at the extreme north-east corner of Sheet 40 S.E.), a mass of May Hill Sandstone is found *in situ*.
HAUGH WOOD ...	40 N.E.	On the slope of the hill just above Scutterdine, Rev. P. B. Brodie found in blocks of Sandstone Petraia bina, Pentamerus oblongus, and the more rare Sricklandinia lens. (*Transactions*, 1868, p. 145).
FULMORES OR FOWMER FARM	40 S.E. ½ mile east of Stony Hill, ½ mile north-east of Croose Farm.	A series of large broken fragments of May Hill Sandstone resting on the Wenlock Shale. (*Transactions*, 1868, p. 156).

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GEOLOGICAL ILLUSTRATIONS.

Fossil Sketches. *Transactions*, 1867, pp. 136, 138, 140.
" " " 1868, frontispiece and pp. 239, 241, 242.
" " " 1870, frontispiece; also pp. 172, 269, 270, 272, and 276.
Geological Sections " 1867, p. 174; 1870, p. 170.
" Diagrams Woolhope Valley. *Transactions*, 1891, p. 164. Plan and Section.
" " Ledbury, The Passage Beds at. 1884, p. 138; 1897, p. 312.
" Plan of ground from Raggedstone Hill and Chase End Hill westwards to Ledbury, 1893, p. 22.
" Map of the Southern part of the Malverns, 1898, p. 67.

SUGGESTIONS FOR ROUTES.

On pages 188 to 190 of *Transactions*, 1867, are given 8 routes for geologists starting from Hereford.

While we agree that "The span of a human lifetime is too short to master the complicated group of Nature's processes in the area of even one's own county," how much more cause have we to be grateful at finding ourselves in a position to summarize the works of our predecessors, to examine them deliberately, and to add the contributions of our own observations, built upon foundations already laid down. Fifty, forty, thirty, or even twenty years ago, the students of Geology were comparatively few in number—the more honour to those who have left behind them monumental records of their works and observations; we enjoy in this present day advantages unknown to them, for truly the pursuit of Geology has now many very able teachers and writers. To the benefit of the public the tendency of the age is the production of more volumes treating upon special branches rather than colossal works.

There remains much yet to be done in the details of the geology of the Woolhope Districts For instance, with respect to the "Faults" in the area, we read in *Transactions*, 1894, page 263 :—"The most considerable of these runs from Mordiford for some distance in the line of the Pentaloe Brook, to near Tarrington, cuts off a portion of the Woolhope Limestone and Caradoc Sandstone from the Central Dome, and, as it has the effect of depressing the strata towards the north, brings these formations into contact with Wenlock Shale; and, at the Gorge, near Mordiford, places the Ludlow rocks in opposition to Old Red Sandstone. Another fault, which runs in a northerly direction east of Sufton and Prior's Frome, depresses the strata to the east, and produces in its course a double ridge of Aymestrey rock."

What is wanting is, that the direction of these faults should be plotted upon a plan on a large scale, and the whole area mapped out in detail, on the lines of the stratigraphical system adopted by Professor

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Groom, D.Sc., F.G.S., in his excellent Geological Map (on the scale of 4 inches to the mile) of the Southern part of the Malverns between pp. 66 and 67 of *Transactions*, 1898. At present our *Transactions* have produced nothing on a larger scale than the coloured diagram on the scale of about one inch to one mile, between pages 164 and 165 of *Transactions*, 1891.

Now for the report of the proceedings of the day. At 10-30 a large party had assembled at the Moon Inn, Mordiford, a little more than four miles south-east of Hereford. The proceedings commenced with the exhibition of numerous local fossils, including a specimen of Bumastus Barrisenis, found a few days ago in the Scutterdine quarries of Woolhope Limestone.

Starting in an easterly direction along the old road to Woolhope, which passes over Broadmoor Common, after an advance of about one hundred yards, a halt was made for the examination of the transition between the Old Red Sandstone and the Silurian Rocks, and of the débris from these rocks in the drift upon the left hand, through what is known to geologists as the Mordiford Gorge. This is an important place in the geology, or geography of the measureless past, of the Woolhope District, not only as being the largest gorge in existence, but also as occupying the position of the principal fault along the course of the Pentaloe Brook, which is crossed about one hundred yards further eastwards. This fault cuts off the northern portion of the Woolhope Limestone and Llandovery Rocks from the central dome. The brook presented, as it usually does, an insignificant feature, its drainage being limited to the small area enclosed within the pear-shaped upheaval of the Silurian ridges. That it can assume occasionally after heavy storms more formidable proportions is known to local residents. An unusual flood has been found worthy of an inscription cut in stone in the porch of Mordiford Church, which records the loss of four persons by drowning, the sweeping away of a large barn, a cider mill, and a cottage, and the transportation of many hundred tons of rock through the village, due to the river being swollen to a width of 180 feet and a depth of 20 feet.

Proceeding from Pentaloe Brook up the hill for another hundred yards or more, a turn on the right was taken over the fields, along an occupation road leading to the Woolhope Limestone Quarries, between Scutterdine and Lower Littlehope These were being worked for local road metalling. The Woolhope Limestone forms a wall around the central dome of the lower stratum of Llandovery Sandstone, except where the circumference loses its continuity owing to the above mentioned fault.

At Scutterdine Quarries about half-an-hour was allowed for the geologists to use their hammers, when steps were retraced into the road to pursue a delightful ramble of about one mile over the fields, crossing Pentaloe brook, occasionally halting for the inspections of contortions

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WOOLHOPE LIMESTONE IN SCUTTERDINE QUARRY, PARISH OF FOWNHOPE, NEAR MORDIFORD.

No 1. To face No. 2, between pages 28 and 29. *Photo. by A. Watkins.*

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WOOLHOPE LIMESTONE IN SCUTTERDINE QUARRY, PARISH OF FOWNHOPE, NEAR MORDIFORD.

No. 2. To face No. 1, between pages 28 and 29. *Photo. by A. Watkins.*

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upon a small scale of the rocks upon its banks, or for searching for the characteristic corals of the Wenlock rocks and shales, and following the course of the brook as far as Warslaw farm.

From Warslaw the direction of the route was northwards, through a small cutting exhibiting Wenlock corals (indicating their marine origin), into the main road from Mordiford Frome and Priors Frome to Checkley, which was entered upon the elevation of 411 feet above sea level, near a place called Clouds.

CLOUDS (CLAWDD, A DITCH OR DYKE).

Turning to the left, or westwards, along the main road, looking down the declivity on the left, a narrow deep cutting was observed below the road, very suggestive of a Keltic lane, or former course of an ancient road. Examinations, however, indicated traces of a raised embankment upon the lower side of the hill, thus making the cutting assume more the character of a defensive work or dyke, protected by a parapet, rather than an ordinary unprotected ancient lane.

We know that Offa's Dyke, upon leaving Herefordshire, enters Wales in Radnorshire, under the name of Clawdd Offa. Reference to page 149 of *Transactions*, 1901, shows that Mr. James G. Wood claims to have traced Offa's Dyke at Mordiford. Communication with him has elicited the information that he has traced portions (much obscured and defaced) between Ross and Hereford, as well as elsewhere south of Ross, and that this cutting at Clouds is a part of Offa's Dyke, or Clawdd Offa.

The fact of Mr. Wood's tracks having been followed and corroborated by Mr. Thomas Southall, of Ross, opens a subject for discussion which it is to our benefit to pursue; with this view ventilation is given to the fragments of Offa's Dyke as suggested by our investigator, and the sheets of the Herefordshire Ordnance Survey Maps, on the scale of 6 inches to 1 mile, upon which they appear are given at the same time.

OFFA'S DYKE (CLAWDD OFFA).

Traces of Offa's Dyke from Ross to Hereford, on the authority of Mr. James G. Wood, M.A., LL.B., F.G.S., F.R. Met. Soc. :—

	Ordnance Survey Map, Herefordshire. Scale 6 inches to 1 mile. Number of Sheet.
Ross.—Over-Ross	51 N.E.
PARK FARM.—2½ Miles from Ross at the Park Farm, on the western side of the road. Mr. Thomas Southall reports:—"The Dyke is very plainly traceable by the side of the main road to Ledbury."...	46 S.E.

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OLD GORE	47	S.W
PERRYSTONE.—The ditch runs all along the Fir Walk and the Ridge of Perrystone Hill. The Holly Wood along the top is quite a feature; so also are the old Yew Trees near the Barrel Farm, Yatton	47	N.W.
OLDBURY CAMP, MUCH MARCLE, RIDGE HILL	41	S.W.
MARCLE HILL (Northern portion of) The Wonder, DEVEREUX PARK. Park Coppice.	41	N.W.
CHECKLEY.—"Clouds" at Mordiford Frome, near Mordiford Cockshoot. ...	40	N.E.
HAMPTON BISHOP	40	N.W
TUPSLEY AND LITLEY	34	S.W.
VINEYARD AT HAMPTON PARK	33	S.E.

The cutting at Clouds above referred to extends for a length of about 500 yards, nearly to Mordiford Cockshoot, on the elevation of 459 feet.

At Mordiford Cockshoot the walk along the main road was discontinued, and the bye-road or bridle path upon the right was entered, soon to be left in exchange for the more delightful walking upon the soft turf of Backbury Hill.

At 1 o'clock, after a walk of about 4½ miles from Mordiford, Ethelbert's Camp was reached, and from the vantage ground of Adam's Rocks, 738·6 feet above the sea level, was seen the Woolhope Anticline, one of the most striking examples of differential denudation in the British Isles.

The first impression conveyed to the visitor to this remarkable scenery is that he is standing upon the circumferential ridge of an elliptical cavity created by a volcano, of which Haugh Wood is apparently the central crater, nor will be disabused of this idea until he learns that there is no evidence within * this area of any scoriæ, lava, or of igneous matter forced up from the fiery heart of the earth, but that the geological formation represents the entire Upper Silurian series of Murchison in an amphitheatre 5 miles in length by 3 miles in width, the lowest member, the May Hill Sandstone, rising in the centre at Haugh Wood, overlain successively by the Woolhope Limestone, the Wenlock Shales, the Wenlock Limestone, the Lower Ludlow Shales, the Aymestrey Limestone, and the Upper Ludlow Rocks and Shales, all these strata dipping

*Outside the area there is evidence of igneous action, namely, at a place called Loose Hill (or sometimes spelled Lowe's Hill), contiguous to the Southern boundary of Bartestre Convent, a little more than one mile distant from Adams Rocks (as the crow flies) in the north-west direction. In a quarry here may be seen a boss of Trap Rock (Diorite) in its normal primitive state, in an incinerated friable condition, and in a laminated condition due to the process of cooling, with the superincumbent and adjacent Old Red Sandstone metamorphosed by intense heat.

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away from the central boss, the harder limestones forming ridges prominent in elliptical areas, with intervening valleys excavated in the shales, the highest elevations surrounding the oval being of the Aymestrey Limestone formation.

To illustrate the configuration of the ground a Plan was exhibited, and a Section upon a large scale across the ellipse; these exhibited the geological sequence of the various strata, of which the following explanation was given, in the presence of the writer, by Dr. Callaway to the Cotteswold Club on their visit a few days ago to the spot.

The Silurian series from the May Hill Sandstone to the Upper Ludlow Shales were successively laid down at the bottom of the sea. Then at the close of the Carboniferous epoch, the whole mass of strata, with the Old Red Sandstone, was bent into a pear shaped dome, and slowly elevated. As soon as it reached the sea level the waves began to plane it off, and as it continued to rise, the forces of the atmosphere, such as rain, frost, and carbonic acid began to play upon it, causing degradation and decay; but acting with most effect upon the shales. The streams that originated in the area cut their way outwards, wearing away hard and soft strata in their course, and carrying out the sediments derived from the wear and tear of the rocks. The shales were removed more rapidly than the limestones, which latter stood up as elevations.

To causes other than volcanic action are we indebted for the beautiful scenery of our country, as has been long taught by geologists, especially by Sir John Lubbock in "The Beauties of Nature," in "The Scenery of Switzerland"; also, under his less familiar title of Lord Avebury, in his recently published work "The Scenery of England and the causes to which it is due."

The general origin of elevations was at first naturally enough associated with direct upward pressure from below. It is now well established that the general cause is the contraction due to the gradual cooling of the earth. This has led to the existence of hills and mountains in some cases by unequal subsidence leaving certain districts at, or nearly at, their former level, so that they stand out as elevated plateaux; and in other cases to lateral compression arising from the contraction which necessarily threw the strata of the crust into folds.

"The Scenery of England and the causes to which it is due" is a very attractive work on Geology, written in language "to be understanded of the people," in many chapters fascinating as a novel, glowing here and there with the fervour of a true naturalist. A few lines from the summary of Chapter VI., on page 224, are quoted :—

"Thus, then, the general history of the earth during geological times appears to have been one of gradual contraction, accompanied by fractures and faults, subsidence and foldings. Those parts which solidified first were best able to retain their position; they sank less, and formed great plains or 'horsts.'

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"When a line of weakness was once established, fracture and folding would follow it over and over again. Hence we find elevation and depression following the same lines at very different periods of the world's history. . . . . .

"These wonderful contortions and fractures give in the first place an impression of sudden and catastrophic changes; and in the second place it is difficult to believe our own eyes, as it seems almost impossible that solid rocks could be bent without breaking. No doubt, however, the process was very slow. If we take a stick of sealing wax and bend it quickly it will at once snap, but if the pressure is applied very slowly it may be bent almost into a circle. Again, it must be remembered that the strata which were folded were covered by others, and in many cases were at a great depth. The bending may also have been facilitated by heat and moisture. The contortions of the rocks belong, of course, to very different periods.

"As the cooling and consequent contraction of the earth is a continuous process, it follows that mountain ranges are of very different ages; and as the summits are continually crumbling down, and rain and rivers carry away the débris, the mountain ranges are continually losing height."

Apropos of this subject, the writer had the pleasure a few days ago of hearing Mr. Mellard Reade, C.E., F.G.S., author of "The Origin of Mountain Ranges," in reply to Dr. Callaway's request to give an explanation of the dome-like structure to the members of the Cotteswold Club assembled upon this spot, Adams Rocks in St. Ethelbert's Camp on Backbury Hill. He said :—

"It was necessary to consider how the dome was produced. To take the simplest form in which it could be developed we must conceive an injection of fluid or semi-fluid rock along a bedding-plane and the raising of the superincumbent strata in a sort of large bubble. This has actually occurred in the Henry Mountains—the Black Hills of Dacota. In such cases a very little consideration will serve to show that the lifted superincumbent strata will be subject to tension and fracture. Another mode in which a domical anticline can be produced is by compression. Imagine a great thickness and extent of horizontal strata subject to compression either by internal expansion or outside pressure. Mechanical reasoning as well as experiment show that when the pressure reaches a critical point the strata will give way by folding in the weakest places. These weakest places, I have satisfied myself by experiment, are determined mainly by the form and inequalities of the floor on which the strata have been deposited, hence the folding may take a circular, elliptical, or linear, form. But whatever form it does take all sections will have a more or less curved form.

"If the plan of the uplift be circular or an ellipse two sets of stresses predominate, the radial and peripheral. The radial pressures are relieved by the uprise of the strata in domical form; the peripheral are relieved by folding or shearing; the inevitable result of the reduction

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of circumferential girth, unless indeed the peripheral portions could give way by simple thickening, a very unlikely result. Let us apply these principles to the Woolhope Dome. It is quite evident that it is not due to the injection of fluid rock, for, as Dr. Callaway has explained, the central core is of Mayhill Sandstone and there are no volcanic rocks associated with the structure. There are also positive evidences of the uplift being due to converging pressure. The axis of the dome is North-West and South-East. It is pear shaped, the convex head of the pear being to the North-West. It is true according to the principle enunciated that the reduction of the circumference by folding has taken place. The 1in. scale geological map shews this clearly by the horizontal folds therein depicted. This horizontal movement is further emphasized by the fault cutting the head of the pear which strikes in a North-easterly direction shifting the rocks by a horizontal throw.

"The Malvern folding lying to the East of the Woolhope Dome takes on a North and South alignment, no doubt influenced by earlier displacement, and the form of the rock floor on which the Silurians were laid down. Here again horizontal folds, due to pressure acting at a different angle, are to be traced. Thus it is seen that uplifts having different axial directions may take place contemporaneously and at no great distance from each other. The questions involved are very intricate and very interesting, but as a generalisation I may say that taken on a more extended scale the great formations tend to assume low domical forms."

Before leaving Adam's Rocks a reference was made to the effects of aerial, subaerial, physical, and chemical forces, sun and frost, heat and cold, air and water, ice and snow, carbonic acid, plants, and man himself as agents during thousands of years in producing the denudation here visible; to water itself as the most powerful agent. Attention was called to the sites of other various drifts as follows:—The Mordiford Gorge, the largest of all the openings, near the Moon Inn, (which was examined in the early part of the day); the high and long bank opposite the bridge leading to Holme Lacy; at the turn of the road about three hundred yards nearer Fownhope; the great mass of drift on the right-hand side where the river approaches close to the road beyond Wye View; and between a bridge over a small stream and a shop nearly opposite the Green Man, in the village of Fownhope.

From Adam's Rocks the return journey to Mordiford was made by various routes, according to the inclination and walking powers of each individual. For the benefit of future visitors the instructions given in the programme for the day are repeated.

For the descent from Adam's Rocks there are various routes to the *rendezvous* at the Moon Inn, Mordiford.

1.—The longest is by leaving the solitary tree (a beech tree), on Backbury Hill, on the left hand, and descending the grassy decline, with gorse in brilliant blossom on either side, down to Priors Court Farm. Distance 3 miles.

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2.—Leaving the Beech Tree on your right hand, and descending at once into the main road, past the Mordiford Cockshoot, thence by Mordiford Frome. Distance about 2½ miles.

3.—Leave the Beech Tree on your right hand and descend at once into the road as far as the Cockshoot. Opposite the Cockshoot (where there is a long thatched building upon the right of the road) a footpath will be found across two very long fields on the top of the hill, thence through two small woods on Marian's Hill, 500 feet high, down to "The Rock" and Pentaloe Brook at Mordiford, close to the Moon Inn. Distance about 2½ miles.

4.—Shortest route of all. Leave the Beech Tree on your right hand and descend at once into the road. Follow the road to about two hundred yards beyond the Cockshoot, as far as a quarry upon the left. Take the lane upon the left, which will bring you out past the Farm of Old Sufton into the main road. Distance about 2 miles.

MAPS FOR THE DISTRICT.

On the scale of one inch to 1 mile, Ordnance Survey, Sheet 198 for the northerly portion, and 215 for the southern portion.

On the scale of 6 inches to 1 mile, Herefordshire, Sheets 34 S.E., 34 S.W., 40 N.E., and 40 N.W. The Geological Survey Maps are 43 N.E. and 43 N.W. For the Horizontal Sections see Plate 13, Section 2.

At 4-0 p.m. about thirty-five members sat down to luncheon.

RARE BIRDS.

After dinner Mr. Hutchinson made a statement respecting rare birds recently recorded in the county, namely:—

Bird.	Locality.	Observer.
The Wryneck (Iynx torquilla)...	Kentchurch ...	Rev. M. G. Watkins.
Mealy Redpoll (Acanthis linaria).	Aylstone Hill, Hereford.	T. Hutchinson.

In the Fownhope and Woolhope district the nightingale may be heard. It was heard a few days ago when the Cotteswold Club visited Backbury Hill on May 15th, on the authority of Mr. L. Mellersh, author of "The Birds of Gloucestershire."

BOTANY.

Many of the previously recorded plants (*Transactions*, 1886, p. 56, 1891, pp. 158, 159, &c.), were again met with. To these lists the following must be added:—

The small flowered Crowfoot (Ranunculus parviflorus), Sweet Milk-Vetch (Astragalus glyciphyllus), and Hoary Cinquefoil (Potentilla argentea),

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OAK ON SUFTON COURT ESTATE, MORDIFORD, GIRTH 28 FEET 8 INCHES AT 5 FEET FROM THE GROUND.

No. 3. To face page 35. *Photo. by J. T. Hereford.*

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At the Woolhope Limestone quarry between Lower Littlehope and Scutterdine, the Common Houndstongue (Cynoglossum officinale) was growing in profusion.

Oak Tree.—About one mile from Mordiford Bridge, on the road to Dormington, a large oak tree is visible from the road. It is on the low ground on the left near the river Lugg. At five feet above the ground it has a girth of 28 feet 8 inches, as measured by Mr. J. T. Hereford, upon whose estate of Sufton Court it grows, and to whom we are indebted for the photograph.

LOCAL HISTORY.

Short notes upon the local history of Mordiford, and of the Church, with a serio-comic suggestion of the origin of the traditions of the Dragon of Mordiford ("a little nonsense now and then is relished by the wisest men"), is to be found in *Transactions*, 1886, pp. 57 to 60.

The connection of a famous Herefordshire scholar with Mordiford has hitherto not been recorded in the *Transactions*. This was Nicholas Hereford, the translator of the principal part of the 1st edition of Wycliffe's Bible. The original manuscript with his alterations and additions in a good state of preservation is in the Bodleian library at Oxford. He was Vice Chancellor of the University of Oxford, and Canon and Treasurer of Hereford Cathedral. Our historian, Judge Cooke (the continuer of Duncumb's History of Herefordshire), quotes an inquest held in May, 1390, "that Thomas Hereford had died, having held for three years the manor of Sufton, &c., and that Nicholas Hereford, his uncle, then aged 60 years, was his nearest heir."

The following Members attended the meeting:—The President (the Rev. Sir George H. Cornewall), the Hon. and Very Rev. the Dean of Hereford, Revs. T. Emmott, R. H. Evans, P. H. Fernandez, E. J. Holloway, Preb. W. H. Lambert, Claud Lighton, C. L. Money-Kyrle, R. T. A. Money-Kyrle, H. F. St. John, F. S. Stooke-Vaughan, C. A. Treherne, R. Hyett Warner, H. Trevor Williamson, Major Genl. Alex. H. Hutchinson, Capt. T. L. Morgan, Messrs. W. Mortimer Baylis, Spencer H. Bickham, R. Clarke, T. Truman Cook, G. Davies, J. E. P. Davies, E. J. Du Buisson, H. Easton, H. Scott Hall, J. T. Hereford, F. S. Hovil, J. J. Jackson, F. R. Kempson, H. J. Marshall, N. H. Matthews, John Probert, H. Pumphrey, John Riley, M. J. G. Scobie, H A. Wadworth, A. Watkins, with T. Hutchinson and H. Cecil Moore, Honorary Secretaries; and the following visitors:—Revs. A. N. Cope (Dormington), L. Corbett (Hampton Bishop), J. Davies (Eyton), H. Grindley (Hereford), H. T. Tilley (Smethwick), Dr. W. Brendon Gubbin, from 15, Redland Grove, Bristol; Messrs. Havard and Shuttleworth, from Hereford, J. W. Stephens (Kington), N. Whitehead (Shipley, Yorkshire), and F. W. Williams, of Bromyard.

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Woolhope Naturalists' Field Club.

SECOND FIELD MEETING, FRIDAY, JUNE 20TH, 1902.

LONGHOPE, HUNTLEY, AND MITCHELDEAN.

Beautifully wooded hills and picturesque vales, alternating, seemingly, in harmonic progression form a striking feature of the country visited, on Friday, June 20th, bordering the north-eastern fringe of the celebrated Forest of Dean. Within a short distance were mines in full swing, but, except here and there, there was no suggestion of their proximity in the country passed over by the Club; and as an ardent lover of nature one cannot but hope that the feet of the commercial despoiler will not stray further afield.

The members trained to Longhope, where they were met by Professor Charles Callaway, D.Sc, F.G.S., from Cheltenham, an honorary member of the Club, who acted as Director.

Carriages from Ross had been engaged to meet the party at Dursley Cross on the Ross to Gloucester road, nearly midway between Gloucester and Ross, or, roughly, about 8 miles from Ross and 10 miles from Gloucester. From Longhope railway station, a walk up a steep lane in a north-easterly direction, conducted over the Upper Ludlow series, past an excavation in a quarry of Aymestrey Limestone, a stage of the Ludlow series not represented in the Geological Survey Map, to a line of quarries of the Wenlock Limestone at the top of the hill. The rugged surface of the steep lane was due to the grooving action and denuding powers of water.

At the summit of the hill a halt was made to admire the beautiful expanse of country here unfolded, the greenery of the Forest of Dean trees, a glimpse of the Severn, and the Cotteswold Hills in the background. The geological features were briefly sketched by Dr. Callaway, especially the dip of the strata towards the Dean Forest Coalfield, with its girdle of Carboniferous Limestone.

At the Wenlock Limestone Quarry a longer halt was made, and attention was called to the contortions in the strata indicating the influence of pressure by forces acting in contrary directions, or at right angles to the dip of the rock. The characteristic Wenlock corals were in evidence; so also were several veins of Calcite of Lime, somewhat coloured and resembling Alabaster, which however is a sulphate of lime, and is further distinguishable from Calcite in that it does not effervesce with acids.

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From the line of the Wenlock quarries the walk over a long field conducted into the road, near Dursley Cross, the appointed place of meeting with the carriages from Ross. Seats were taken in the char-a-banc, and the drive commenced towards Huntley, eastwards along the road to Gloucester.

About half a mile from Dursley Cross the road is cut through a long belt of Woolhope Limestone running nearly North and South, and a further drive of another half mile over May Hill Sandstone along the southern base of May Hill brought the party to a quarry upon the left of the road exhibiting a large exposure of Longmyndian (Pre-Cambrian) rocks, of which the following description is given in Murchison's "Siluria," 5th edition, 1872, page 98 :—

"At a distance of about nine miles to the South of the Malvern range, the Upper Llandovery rocks reappear in May Hill and Huntley Hill, where also they are surmounted by Upper Silurian rocks. In the South Malvern section there is a great hiatus between this deposit and the fundamental stratified masses of the tract. Applying the same test to May Hill, by ascending from the lowest visible rocks, we meet there with a much greater omission. This ascending order is best exposed on the sides of the highroad passing from Gloucester to Ross, near the village of Huntley. In approaching the higher ground, the first rock which is observed to jut out from the plain of the New Red Marls has all the aspect of the Cambrian rocks of the Longmynd. Containing no fossils, and being much broken and contorted, this rock has no visible connexion with the overlying sandstones and shale exposed in ascending May Hill, in none of which are there any traces of either the Llandeilo or Caradoc formations, or even of the Lower Llandovery rocks. Seeing that this boss of old slaty rock is directly upon the southern extension of the range of the rocks forming the Malvern Hills, I would adduce this fact as a support to the conclusion—that the crystalline and schistose nucleus of those hills is of Cambrian age."

The rock, however, is now described as Pre-Cambrian. The party assembled at the quarry gathered round the Professor, who said: "We have now arrived at the principal goal of our observation, but a little explanation is necessary. We are viewing an exposure of the Longmyndian strata. The old books would tell us nothing about it. Murchison and other old writers placed the Cambrian at the base of the stratified rocks. It appeared also in Shropshire, and was called by Murchison the Lower Cambrian, originally forming the bottom rocks, but during the last twenty years a great deal of work had been done in determining rocks older than the Cambrian. These were called Pre-Cambrian, but, within the last ten or fifteen years, evidence has been collected to show that the Longmyndian rocks were very much older indeed than the Cambrian. It was admitted on all hands, even by the Geological Survey, who are extremely careful in their admissions, that the Longmyndian rocks of Shropshire were Pre-Cambrian. Therefore they have a peculiar interest as belonging to an epoch antecedent to the Cambrian, and having been

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formed before the oldest organic forms of which we have any knowledge existed at all. That statement requires qualifying; organic remains of which we had certain knowledge. There is no doubt that life did exist in the older formation. Cambrian rocks contain organic life in many forms, and not by any means the lowest The law of evolution compels us to infer that previous to the Cambrian there must have been a long succession of animal forms, arising from the simplest to those found at the base of the Cambrian. In the Longmyndian rocks some of the strata are covered with worm tracks and worm burrows, although nothing more definite has been found. That Longmyndian formation is represented in this part of the country by the small mass at which we are now looking. We observe that the rocks turn up on end almost vertically and at the base curve towards the west. The paper I hold in my hand, entitled 'Longmyndian Inliers at Old Radnor and Huntley,' gives a description of this section."

The Professor said he might mention that this formation occurred in the great line of dislocation called "Malvern Fault," which ran down the country in a straight line north and south. That line ran close to this locality, and corresponded, therefore, to the upheaval of the Malvern chain itself. We should see within a few yards eastwards the New Red Sandstone, real stratified rocks, formed under water as sandstone might be; these rocks were much younger than the Malvern rocks, and were known to Geologists under the name of Lower Keuper rocks of the Trias.

An extract is now given from the paper written by the Professor ("Quart. Journal Geol. Soc." Vol. 56, 1900, p. 518, with plate 28):—

LONGMYNDIAN INLIER AT HUNTLEY.

It is more than thirty years since Murchison recognised the presence of rocks similar to those of the Longmynd in a quarry west of Huntley. He writes:—*Siluria*, 4th edition (1867), p. 99. "In approaching the higher ground, the first rock which is observed to jut out from the plain of the New Red Marls has all the aspect of the Cambrian rocks of the Longmynd. It is a hard, siliceous, close-grained, dark grey, schistose stone with quartz veins, and is quarried for the use of the roads." This description requires some modification. The rock is "schistose" only in the sense in which an ordinary grit or shale is "schistose" Nor is it predominately "quartzose." A typical specimen of the rock, cut for the microscope, is seen to consist mainly of felspar, with quartz in quite subordinate proportion. The former includes both orthoclase and plagioclase. Some of it is in unbroken prisms, the remainder being in irregular angular fragments. The quartz is also in angular bits. The slide contains a fair proportion of a black opaque substance in irregular particles, many of which contain minute elongated prisms of felspar, suggesting a partly decomposed dolerite.

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"This grit, though it suggested to Murchison, as it did independently to myself long afterwards, a resemblance to the Longmynd Series, does not under the microscope present a very close similarity. Judging from the slide examined, the rock is wanting in the bits of rhyolite which are so characteristic of typical Longmyndian, and it is distinguished by a greater abundance of felspar. Some hand-specimens of the rocks are, however, less felspathic. The angularity of the quartz is a feature common to the Huntley rock and to the typical Longmyndian grit. The black grains are not characteristic of the type, but I have seen them in a slide from Haughmond Hill. The shaly beds associated with the grits are also suggestive of the Longmyndian of Shropshire, being more indurated than ordinary shales.

"The section exposed in Huntley quarry presents a thickness of about 80 feet, massive grits predominating over the shaly bands. The beds stand almost vertical, with an easterly dip, but towards the bottom they curve round westward, so that they probably form part of a fold. The rocks may be traced across the strike for about 200 yards. They form a small hill projecting like a promontory towards the south, with the Trias faulted against the eastern base, and a hollow dividing the ridge from the May Hill Sandstone on the west.

"That the Huntley mass is not Silurian appears evident from its dissimilarity to the adjacent May Hill series. The nearest exposure of the latter occurs in a small quarry in a garden, about 200 yards to the south-west. The rocks are highly quartzose, with partings and thin beds of soft grey shale. The dip is 70 degrees south-westward. The May Hill Sandstone in other parts of the district is also predominantly siliceous, and often contains numerous bits of purple felsite, very similar to typical Uriconian. Many years ago, I found in a quarry (now overgrown) on May Hill, some conglomerate beds in which were pieces of grey shale, undistinguishable from the Shineton Shales of Malvern and Shropshire; and it would seem probable that the shaly partings in the garden quarry are derived from the same source. The May Hill Series is therefore largely derived from land consisting of quartzose rocks, purple rhyolites, and soft shales, an assemblage which offers a strong contrast to the constituents of the Huntley Grit. The materials of the latter include so large a proportion of broken and unbroken felspar-crystals as to indicate an admixture of the ejectamenta of contemporary volcanoes, a common feature in the Shropshire Longmyndian, but one which is not known in our Western Midland Silurian.*

"The tectonic relations of the Huntley grits and the May Hill Sandstone could not be ascertained. The Silurian rocks of the district lie in a boat-shaped anticline, whose axis strikes north-westward, but the eastern part is cut off by a north-and-south fault, bringing down the Keuper. The position of the Longmyndian is about on the axis of the anticline, and close to the Keuper. The fault is apparently a continuation

* Of course I do not include the Lower Silurian of Murchison.

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of the dislocation which forms the eastern boundary of the Malvern crystallines. This little north-and-south ridge of Longmyndian is approximately on the prolongation of the geographical axis of the Malvern chain, and, like the greater part of that range, has May Hill Sandstone on one side, and faulted Keuper on the other. As these Longmyndian strata strike north and south, it seems probable that they are continued northward, and underlie the Cambrian and newer strata of the Malvern district.

"The identification of these outlying masses of Longmyndian rocks enables us to make a considerable extension of the distribution of that series. From Haughmond Hill to Old Radnor Hill is well nigh 40 miles; it is nearly the same distance from Old Radnor Hill to Huntley. From Huntley to Haughmond Hill is about 60 miles. These three localities are situated at the angles of an isosceles triangle, whose apex is at Old Radnor, and whose base corresponds for a great part of its course with the Malvern-Abberley axis and its northward continuation. It is highly probable that Longmyndian rocks occupy a considerable portion of this triangular area below the Palæozoic strata, and it cannot be doubted that this ancient series, whose vast thickness is well-known, extends far beyond these limits in other directions."*

Mounting the carriage the drive to Huntley was continued. The New Red Sandstone, or Trias, was immediately entered, a few yards of Red and White Sandstone and Waterstone (Keuper) intervening before entering upon the Red Marl with Keuper Sandstone.

At Huntley, near the Red Lion Inn, are the remains of a village cross, with fragments of a shaft 1 foot 10 inches high, on a rough hewn base more than 2 feet square. Not far distant were seen the old "Stocks," on the roadside, and the village "Pound."

From Huntley a five mile drive westwards along the old Roman road, by Little London and through Longhope brought the party to Mitcheldean, crossing the same geological series (but in the inverse order) as traversed in the morning.

Between Longhope and Mitcheldean some fine exposures of Old Red Sandstone were seen in large slabs, as if ready for use as pavements. Bricks and pipes are made here.

At Mitcheldean a halt was made and the Church was visited. A short description of it will be found in *Transactions*, 1887, p. 97.

From Mitcheldean the members walked for nearly a mile up a steep hill, rising from 495·2 feet at the Church to 788·2 feet at the summit, traversing successively the Carboniferous Shales, Limestone, and Millstone Grit, which border the coalfields of Dean Forest. The road is marked on the Ordnance Survey Map as Roman Road, and traces of Roman Paving were at one time more visible than in the present day. The descent was then made down the hill, on an open road devoid of

* Reference should be made to "Quarterly Journal Geol. Soc., Vol. LVI., Part XXVIII.," for the Sketch Map showing the relations of the Old Radnor Inlier to other rock masses See also on page 519 of the same volume a Section of the Longmyndian and associated rocks at Huntley.

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hedges, along a picturesque slope, with cottages sprinkled here and there, to Drybrook, a village at the base (624·6 feet), whence the route was taken at right angles due North, passing near Euroclydon, in the Parish of Hope Mansel (Herefordshire), the residence of Mr. Thomas Bennet Brain, situated on an elevation of 725 feet, and commanding charming views.

Near Euroclydon a divergence eastwards for about two hundred yards brought the members to a quarry, the base of the Carboniferous series, in the Lower Limestone Shales at Silverton Farm. Here Dr. Callaway made a few remarks upon the relation of the series traversed in the course of the day.

We commenced by going over the Upper Silurian series, and observed all the strata dipping westerly. As we approached Mitcheldean from Longhope we saw the Old Red Sandstone dipping in the same direction. We were now standing at the base of the Carboniferous series, the exposure being that of the Carboniferous Shales. We were on the edge of the Forest of Dean Coalfield, which lay in the centre of a basin with all the beds dipping towards it from all directions. Moreover, at the distance westwards of two or three hundred yards from this spot, on our way homewards to Mitcheldean station, we should have a good opportunity of examining in the road, in what is known to local geologists as the "Deep Cutting," the transition beds between the Old Red Sandstone and the Carboniferous Series.

The "Deep Cutting" being reached, an exposure on the right of Old Red Conglomerate exhibited pebbles cemented in a sandy matrix. The rock was made up of hard quartz pebbles, and small grains of quartz, which might be compared to coarse sand. It was observed that the pebbles and grains of quartz had been rounded,—evidence of having been rolled about by the force of water. The deposit is sedimentary and represents the floor of an expanse of sea or of a large inland lake.

It is here deserving of notice that in the Proceedings of the Cotteswold Club, 1866, p 194, the Sections in this "Deep Cutting" are given, as carefully measured by John Jones and W. C. Lucy, representing 149 divisions of Passage Beds between the Old Red Sandstone and the Carboniferous series.

Reference to the Ordnance Survey Map, Herefordshire Sheet 55 N.W.; Gloucestershire, parts of Sheets 23 and 31, shows that Euroclydon, the quarry at Silverton Farm, and the "Deep Cutting," are in Herefordshire, in the parish of Hope Mansel, in a narrow tongue of land projecting eastwards towards Gloucestershire.

From the "Deep Cutting" (Herefordshire) a pleasant drive through the Lower Lea Bailey Inclosure (Gloucestershire), a portion of the Crown Woods of the Forest of Dean, brought the members again into the county of Hereford to Mitcheldean Road Station, about 2½ miles distant from the "Deep Cutting."

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Shortly before reaching the station a conspicuous escarpment was seen on the rising ground about half a mile directly south of the station. From the station the bend is seen forming a prominent feature in the landscape It consists of the Old Red Sandstone Conglomerate formation, and has been previously recorded in *Transactions*, 1901, page 228, as a portion of the Upper beds of the Red Sandstone in Herefordshire. If you ascend the hill you will find gritty beds overlain by Carboniferous Limestone, all following more or less the same bend.

From Mitcheldean Road Station the train due at 4-11 brought the party home after an instructive geological excursion.

MAPS OF THE DISTRICT.

The Ordnance Survey Maps for the district are : On the scale of 1 inch to 1 mile :—For Mitcheldean, Sheet 234, in which Mitcheldean appears in the extreme north-west corner of the map; the adjoining maps are 233, 215, and 216.

On the Scale of 6 inches to 1 mile :—Gloucestershire, 24 S.W.; also :—Gloucestershire, 23 S.E.; Herefordshire, parts of sheets 52 and 55.

For Mitcheldean Road Railway Station, see Herefordshire, 52 S.W.

For Drybrook (about one mile South-west of Mitcheldean), see Herefordshire, sheet 55 N.W.; Gloucestershire, parts of sheets 23 and 31.

The Geological Maps for the district are 43 S E. and 43 S.W. Horizontal Section :—For a Section running N.E. from Wood Edge Hill, by Abinghall Church, Longhope, near Dursley Cross, to Taynton House, see Section 1, Sheet 13.

The following attended the meeting :—Professor Chas. Callaway, M.A., D.Sc., F.G.S., who acted as Director for the day; Revs. C. Burrough, C. B. Caldicott, F. Fernandez, J. E. Grasett, E. J. Holloway, Preb. W. H. Lambert, and H. B. D. Marshall; Messrs. T. S. Aldis, W. Mortimer Baylis, C. P. Bird, R. Clarke, C. Hardwick, H. A. Wadworth, and H. Cecil Moore, honorary secretary; with visitors :—Rev. H. M. Evill, Mr. Herbert E. Jones, from Ewias Harold, Mr. Shuttleworth, Mr. Woodcock, and another.

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Woolhope Naturalists' Field Club.

THIRD FIELD MEETING (LADIES' DAY), THURSDAY, 24TH JULY, 1902.

HEREFORDSHIRE BEACON AND EASTNOR CASTLE.

Training to Ledbury, brakes conveyed the party to near the Camp Inn at the foot of the Herefordshire Beacon. The journey for the most part was over the Lower Ludlow formation. South of Barton Court and along Chances Pitch, before reaching the Northern or Upper Lodge of Eastnor Park, the road is cut through a narrow band of Aymestrey Limestone, running nearly parallel in a south-westerly direction with the ridge of Wenlock Limestone, which forms the Ridge Way in Eastnor Park.

Near the great fault at the base of the intrusive Archæan rocks of the elevated backbone of England the party dismounted, and the ascent of the hill was commenced. Advancing in zig-zag route up the western slopes some reached the Herefordshire Beacon Camp, 1,114 feet high on the summit; others were contented with reaching the lower heights of Tinkers' Hill above the contour of 700 feet in the northern part, of Hangman's Hill above the contour of 800 feet in the southern direction, or of the intermediate rising ground of Broad Down above the contour of 900 feet.

The Shire Ditch forms the county boundary at or near the summit of the hill running from Chase End Hill in the South successively over Ragged Stone Hill, between Hollybush Hill and Midsummer Hill (as shown on Sheet 42 N.W.), Swinyard Hill, along an eastern entrenchment of the Camp on Herefordshire Beacon, through the cutting at Wind's Point, over Black Hill (Sheet 36 S.W.), through the cutting at Upper Wyche (Sheet 36 N.E.), thence in about one-third of a mile the boundary takes a north-westerly course down the western slope of the hill into the main road near the Royal Malvern Spa.

The most detailed and recent reference to the Geology of this part of the Malvern Range is to be found in a paper by one of our honorary members, Professor T. T. Groom, D.Sc., F.G.S., in "Quarterly Journal," Geol. Soc., Vol. LVI., 1900, pp. 138-197. and plate VIII., in which the details of his very carefully plotted geological survey, and of his sections, exhibit the intensely folded and faulted complex of Archæan, Cambrian, and Silurian rocks. For Sections across Hangman's Hill, Tinker's Hill, and Broad Down, see page 141.

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From this locality the Archæan series designated Malvernian, extending from Chase End Hill nearly two miles southwards along the summit, or core of the range, continues northwards for an extent of six miles, along Herefordshire Beacon (1,114 feet high), Wind's Point, Black Hill, Wyche Cutting, Worcestershire Beacon (1,395 feet high), Sugarloaf Hill, and North Hill, to Cowleigh Park Farm, a mile further northwards.

It must not be forgotten that these rocks are all Palæozoic, and that an extensive fault exists upon the eastern side where the Trias (Mesozoic) forms the boundary of the whole Malvern Range, reaching an average elevation of 500 feet; its fringe from North Malvern to two miles south of Great Malvern, maintaining the elevation of 600 feet. This is an important fault. In our visit last June to Huntley we observed a connection with its extension southwards, and evidences are traced across the Severn into Gloucestershire.

Time did not allow of any delay upon the hill. The Reservoirs, an auxiliary water supply of Malvern, formed one of the objects of interest here; so also did a small natural cave, perhaps somewhat enlarged by rough artificial workmanship, known as Clutters Cave, on the 900 feet contour line on Broad Down hill.

In the descent from the top of the hill the Malvernian, the May Hill Sandstone, the Woolhope Limestone, and the Silurian Shales are crossed before reaching the Wenlock Limestone, which here makes a peculiar bend before striking in a south-westerly direction to form the elevated platform through Eastnor Park known as The Ridge Way.

The descent of about two hundred feet westward from Clutters Cave to a large stone in a natural amphitheatre-like hollow was found rather perilous from its slippery condition owing to the dry sward. Happily it was made without mishap to any member of the party. This stone has gained such terms as the "Stone of Divination," "The Old Pagan Augural Stone," "The Sacrificial Stone" of Druidical times, and "The Shew Stone" as connected with a boundary stone of the old Malvern Forest. Whatever it may have been, it has evidently at some period fallen from the heights above; it measures about 4 feet square, and has a small sunken cavity, say about 4 inches deep, on the side facing the south. The seclusion of the locality may perhaps seem calculated to connect it with religious or sacrificial rites. And such connection will have to die hard, seeing that it is maintained by a living witness. A woman who could not call herself old, resident in the contiguous Walm's Cottages, informed the writer that, when she came here about forty years ago, the stone was covered with marks of blood, and continued stained of a bloody colour for several years.

It is possible that this coloration may have been due to a lichen, a fungus, an alga, or even an infusoria, of which there are several which at some stage or other of their development assume a colour either vermilion, scarlet, crimson, or like diluted blood; such, as amongst others, Chroolepus jolithus, found staining rocks, walls, or churchyard stones,

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effaceable only with difficulty; the spirillum Ophidomonas sanguinea (Ehremberg) * of stagnant water; Euglena viridis, belonging to the lower Infusoria, or by some pronounced as alga, though normally green, after transformation by oxidation becomes red; Protococcus nivalis, concerning which various speculations have been indulged in, even by scientists, as to whether it was a lichen, a fungus, or even any infusorial animal, has finally been classified as a fresh-water alga, under the name of Chlamydococcus nivalis. This is the Red Snow which has at times brought so much bewilderment and portents of evil to some few who have seen it.

From the Divination Stone a short distance further down the hill led the party to a gate opening on a drive in News Wood in which is situated Walm's Well, which forms an auxiliary source of water supply by a conduit to Eastnor Castle. Walm's Well, as also the less known Mooral's Well in Colwall, was formerly much resorted to by rustics for supposed curative properties.

Close to Walm's Well was found a rough lane through the wood which conducted to the drive in the Ridge Way where, by appointment the carriages were to meet the party. The Ridge Way is a narrow elevated extension of Wenlock Limestone which has resisted the denudation processes that have removed the softer Silurian shales on each side of it. The drive up the Ridge Way is about three miles in length; the first two miles afford a sheltered drive through a wood where old juniper and yew trees are a conspicuous feature. Shortly before reaching the Second Lodge that rarity, a mistletoe-bearing oak, grows upon the right of the drive. The remainder of the drive, one mile in length, is through the Deer Park, which is open country.

The Obelisk crowning the hill on the left, about one mile eastwards, was erected by the first Earl Somers to the memory of his son, Hon. Major E. C. Cocks, who fell before Burgos, 8th October, 1812. It rises 90 feet from the plinth.

A castellated gateway with embattled towers guards the entrance to the court-yard of Eastnor Castle. The Castle has a majestic appearance, and the undulations of well-wooded ground add to the picturesque character of its surroundings. It was built by John, first Earl Somers, in 1812, after the designs of Sir Robert Smirke, R.A. It is castellated in the style of a Norman baronial castle of the time of Edward I., with round towers, machicolated at the angles, and a square Keep.

The Entrance Hall, with Romanesque decorations and a Musicians' Gallery, conducts to the Grand Hall, a fine hall 60 feet long by 30 feet wide and 65 feet high in the centre of the Castle. A valuable collection of paintings, ancient and modern, of sculpture, armour, carvings, vases, books, and furniture, &c., is on view in the halls, staircases, corridors, chapel, and rooms.

* See "Microbes, Ferments, Moulds" (*International Scientific Series*), page 128.

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For a description of these the artistic monograph of "Eastnor Castle," dated November, 1889, edited by Lady Henry Somerset, compiled by Gwenllian E. F. Morgan, must be consulted. It is sold on the premises to visitors, or copies can be obtained post free for three shillings and sixpence on application to the Secretary, Eastnor Castle, Ledbury. At the present period the public is admitted on Mondays and Fridays on payment of one shilling, the proceeds being devoted to a Charitable Institution.

The view from the Upper Terrace is charming and diversified. In the foreground is the Lake, and in the background is the range of the Southern extremity of the Malvern Range, extending from Herefordshire Beacon to Chase End, the last hill in the ancient Chase of Malvern, which originally extended down the western slopes of the range (see *Transactions*, 1898, p. 65). The margins of the lake are wooded to the water's edge. Amongst willows and other trees is a profusion of dogwood (Cornus sanguinea), the changed foliage of which in autumn imparts to the lake a striking border of deep crimson colour.

Upon the nearest island stood Castleditch, an ancient manor house, moated and fortified, the residence of the family of Cocks from the sixteenth century until the erection, in 1812, of Eastnor Castle.

Amongst trees in the grounds are fine specimens of Abies pinsapo, a very beautiful Picea lascio-carpa, a Pinus bracteata, and some well grown Wellingtonias.

Conservatories, Vineries, Peach-houses, &c., are in the Kitchen and Fruit Gardens. The great vine is 72 feet long. The reputation of the fruit produce under the cultivation of Mr. Coleman, the head gardener, who has been at Eastnor for more than thirty years, is well known. The following is an extract from the Report of the General Congress, in 1884, at Rouen, of the Pomological Societies of France, as given in *Transactions*, 1884, p. 236 :—

"Of the grapes, from Mr. Coleman, of Eastnor, it is enough to say that they were in his customary form, and took the highest prize awarded for produce of the vine—a large silver medal. They were shown in the best possible condition, without the removal of a particle of bloom."

After luncheon *al fresco* in the garden grounds some business of the Club was transacted, and the following paper was read :—

THE CUCKOO IN 1902.

By Thomas Hutchinson.

The movements of the cuckoo having been somewhat erratic this year, a few notes on the bird may be of interest.

Mr. Howard Saunders in his "Manual on British Birds" states that even in the South of England the bird seldom arrives before April 6th, the male precedes the female by a few days, in June he "changes his tune," and becomes hoarse, while by August most of the adults have

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departed, though the young remain until October. The same authority also states that the female resorts to the same locality year after year, deposits her egg on the ground, and then conveys it in her bill to the nest of some bird destined to act as foster-parent From five to eight are produced by the female in the season, and from 12 to 13 days are required for incubation. There is a statement made in Germany that exceptionally cuckoos hatch their own eggs. When only thirty hours old the intruder begins to eject the other nestlings by the aid of a cavity in its back, which fills up after the 12th day. When two cuckoos are in the same nest the struggle for existence is sometimes severe.

White, of Selborne, gives dates as follows :—From April 7th to 26th ; last heard on June 28th.

This year I have been told the bird was heard in the county on April 11th, but I did not hear it myself until the end of the month, when it was heard pretty generally until about the end of the first week in May. Then came a long spell of cold weather, and the bird was seldom heard for nearly three weeks, the same thing happening during the hot days that occurred at the end of the month of June, but about the 26th, and well on into July, it was to be heard everywhere in full voice, and what is more curious still, I have not this year heard one note out of tune, and so far as I can learn the hoarse or stuttering note has not been heard at all.

This raises two suggestions : First, that it is the continual exercise of the voice that causes the note to be produced out of tune, which begins as a rule early in June, and gradually develops into a hoarse or stuttering sound. By the middle of the month, or at any rate by the end of the third week, the bird has ceased to shout. Secondly, assuming that by continual exercise the voice, as it were, gets worn out, why did not the birds continue to shout this year until they became hoarse ? Does not this suggest that they took their departure, and do not the old birds every year take their departure before the end of June ? This year they were heard in the parish of Kimbolton and near Hereford as late as July 5th.

On June 30th I wrote to the " Standard " asking for information, and received replies from various parts of the country, which it may be interesting to note shortly.

Mr. E. W Phillips. of Taunton, wired and said : " Cuckoo going strong here." Mr. Pember R. Davis, of Lewes, says : " The cuckoo is in full voice, and I have not heard it shout one note out of tune." The Rev. T. F. Dixon, of Wellsborough Rectory, Kent, says : " I never remember the bird being in such full and true voice so late in the year." Mr. John E. Clegg, of Coventry, says : " Last Thursday night (June 26th) I heard a cuckoo shout, and not one but several notes were distinctly out of tune." Mr. E. Lucas, of 263, South Lambeth-road, S.W., says : " I heard the cuckoo in full voice near Lyndhurst, in the New Forest, last Sunday, June 29th." Mr. H. B. Allen says : " The cuckoo's note is still being heard in perfect tune in the parish of Staple-

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grove and neighbourhood, near Taunton." The Rev. A. H. Snowden, of Northampton, says he did not hear the cuckoo after June 20th, and thinks that it was on 17th that he heard it with its changed note. All the above letters are dated July 2nd. Mr. Edward Castall, of Oakham, in a letter dated July 5th, says: "I heard it frequently yesterday. Here we consider it leaves off singing at or soon after the longest day. This year they were not seen until May 10th." Mr. G. W. Newman, of Cheltenham, says: "I heard one call a little out of tune last Sunday (June 29th). They are usually gone by July 7th, the popular idea of August being erroneous as to the old birds."

You will observe that Mr. Castall terms the note "singing," and Mr. Newman terms it a "call." In my letter to the "Standard" I used the word "shout," and Mr. Newman asks if that is "a good description of the note, which he says is a regular musical cadence of a third." I think "shout" is a better description than "call" or "singing," for the note is not a call in the same sense as that of the partridge, neither is it a song like that of the lark or thrush. When I used the word "shout" I was thinking of Wordsworth's lines :—

"Echo, echo, mountain echo,
Solitary, clear, profound,
Answering to the shouting cuckoo,
Giving to her sound for sound."

Since writing the above I have heard from Mr. John Nix, of Eastbourne, under date 31st July: "I heard the cuckoo on the 13th inst., near Harning, Norfolk; its note was full and without blemish. About five years ago I heard it in the same place four days later than the above date, but its note was faltering."

I have also heard from Rev. W. H. Purchas, Alstonfield Vicarage, as follows :—"My last record of hearing him is June 27th; on the forenoon of that day his note was heard for an hour or two, neither out of tune nor stammering"

ENTOMOLOGY.

LEPIDOPTERA.—Mr. Hutchinson gave the information that, in a letter, dated July 18th, the Rev. W. H. Purchas wrote that when he was a boy he occasionally took *Pieris cratægi* in the neighbourhood of Ross; that one evening he took two sleeping on grasses in a meadow near Weston-under-Penyard. These captures were previous to those already recorded in *Transactions*, 1887, p. 104.

Mr. Purchas also reported having taken a specimen of Thecla betulæ near Llangrove Common, a new species for this county.

Mr. Hutchinson saw a specimen of Thecla w-album in a garden at Hereford, on 22nd July.

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FOXGLOVE WITH CUP-SHAPED TERMINAL FLOWER UPON EACH SEPARATE BRANCH

No. 4. To face No. 5, between pages 48 and 49.

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FOXGLOVE WITH CUP-SHAPED TERMINAL FLOWER UPON EACH SEPARATE BRANCH.

No. 5. To face No. 4, between pages 48 and 49.

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BOTANY.

Foxglove with Cup-shaped or Bell-shaped Terminal Efflorescence.

Mr. Moore exhibited a fine cultivated specimen of a white-flowered Foxglove, which "sported" by growing an open cup-shaped blossom at the apex not only of the stem but also as a terminal flower on each separate branch, observing that in the Foxglove the flowers open commencing from below upwards, but that in the specimen under notice the terminal flower opened first. Such a freak of the Foxglove is known to be not uncommon, and casual observers attribute it to hybridisation with a Canterbury Bell, on account of the apparent resemblance in form to this Campanula.

The explanation was met by Mr. S. Bickham as a condition not uncommon in the Foxglove in a state of cultivation. He had never observed it in the wild Foxglove. It is a freak in Morphology due to the plant's endeavour under cultivation, in rich garden soil, to become double flowered, and not likely to be produced by hybridisers, or by fertilisation by bees, insects, or wind. The flower has become more expanded, and an examination of the stamens shows that they are double in number to those of the single wild flower. It is misleading to call the expanded flower Campanula.

Mr. James Lloyd, of Kington, remarked that he had observed the same double efflorescence in the case of the purple blossomed Foxglove, and that last year he had seen a catalogue of flower seeds in which "Digitalis campanulata" was offered at 6d. per ounce, and described, "dwarf variety with very large flower at the summit."

ORDNANCE SURVEY MAPS FOR THE DISTRICT.

The Ordnance Survey Maps for the route of the day are :—

On the scale of 1 inch to 1 mile :—For the northern part, Herefordshire Beacon, No. 199; for the southern portion, Eastnor, Sheet 216.

On the scale of 6 inches to 1 mile: For the nothern portion, Sheet 36 S.W. For the southern portions: Herefordshire, Sheet 42 N.W.; Worcestershire, part of Sheet 46 and 53; Gloucestershire, part of Sheet 10.

The Geological Survey Map is 43 N.E.

The following members and their friends were present :—The President, Rev. Sir George H. Cornewall, Bart., and Mr. T. Blashill (Vice-President), Rev. A. C. Auchmuty, C. B. Caldicott, W. S. Clarke, T. Emmott, R. Evans, H. M. Evill, J. E. Grasett, A. H. McLaughlin,

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H. B. D Marshall. and Stooke Vaughan ; Messrs. T. S. Aldis, J. Edy Ballard, Spencer H. Bickham, J. U. Caldicott, R. Clarke, J. E. P. Davies, E. W. Du Buisson, C. Fortey, G. H. Hadfield, C. Hardwick, E. J. Hatton, J. J. Jackson, C. J. Lilwall, J. W. Lloyd, W. G. Lloyd, A. Parker, John Riley, C. Rootes, W. H. Steward, H. A. Wadworth, with T. Hutchinson and H. Cecil Moore, Honorary Secretaries, and James B. Pilley, Assistant Secretary.

The visitors included Mesdames Aldis, Auchmuty, Aitken, Britten, Caldicott, Dallas, Dryland, Hardwick, Lilwall, W. G. Lloyd, McLaughlin, McAdam, H. C. Moore, and T. J. Pulling; with Misses Auchmuty, Britten, Dore from Reading, Evill, Hadfield, Lane-Moore, L. D. Marshall, Parker (2) from Kington, and Williams.

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Woolhope Naturalists' Field Club.

FOURTH FIELD MEETING, THURSDAY, AUGUST 28TH, 1902.

BREDON HILL.

On Thursday, 28th August, a large party met at the Hereford Railway Station, increased *en route* as they travelled through Worcester to Bredon. At Malvern, Mr. L. Richardson, F.G.S., from Cheltenham, honorary assistant secretary of the Cotteswold Naturalists' Field Club, joined the party, and acted as Director. Mr. Carleton Rea, B.C.L., President of the Worcestershire Naturalists' Club, joined the party at Worcester.

The walk to the western base of Bredon Hill was through the pretty hamlet of Westmancote. Shortly after striking the meadow-land, a short halt was made at an exposure in a small quarry with the object of demonstrating its connection with certain rock masses ("The King and Queen Stones") to be seen further on our way.

The quarry exhibited mainly débris of Inferior Oolite freestone, and there was very little evidence of solid rock. Mr. Richardson pointed out that that which at first sight appeared massive would in most cases prove, upon closer inspection, to be a kind of breccia formed of fragments of Oolite cemented together by carbonate of lime. The less the quantity of infiltrated carbonate of lime the greater the rate of the removal of the débris by denudation.

After a short climb, rendered more stiff by locked gates and stone walls, the second halt was made upon the contour of about 550 feet in a sheltered hollow, about half-a-mile above the base of the hill, where two tall isolated masses, composed of fragments of Inferior Oolite cemented together by infiltrated carbonate of lime, called "The King and Queen Stones," stand conspicuous amongst other smaller and some prostrated fragments.

Here the party had luncheon *al fresco*, and some photographs were taken. The isolated rocks here exposed gave the impression of being either the resultants of the differential denudation of slipped rock from the higher ground, or of having been left by quarrymen *in situ*, or more probably due perhaps more or less to both causes.

It may be mentioned that a small tumulus, surmounted by trees, situated a short distance south of the "King and Queen Stones," did not escape the observation of our party on the route of the ascent.

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From the " King and Queen Stones " Mr. Richardson directed the party eastwards and upwards a short distance to a quarry in the Inferior Oolite, wherein was exhibited a brown sandy rock containing spines of sea-urchins; also the Pea-grit-equivalent, having at its base a layer almost made up of the ventral valves of *Terebratula simplex*. The Pea-grit-equivalent also yielded *Rhynchonella subangulata* and numerous ossicles of *Pentacrinus*.

Here Mr. Richardson remarked:—"On Bredon Hill are preserved only the four lowest subdivisions of what is usually known as the Inferior Oolite. In the Cotteswolds proper these are, in ascending order, (1) a sandy rock characterised by an ammonite known as *Tmetoceras scissum*, (2) Lower Limestone, (3) a rock formed typically of pisolites, and (4) the Lower Freestone. The first of these deposits has been apparently recognised on the eastern flanks of the hill. The pisolitic rock, or Pea-grit, is seldom typically represented here, but exhibits numerous lithic varieties. Capping this deposit is the Lower Freestone, which attains a very considerable thickness. Generally speaking, fossils are very rare on Bredon, and the strata in the western side of this quarry are perhaps of the most interest to the fossil collector,"

From the quarry the ascent was made up an easy gradient to the summit of Bredon Hill, which was reached at 3 o'clock. The vast extent of country visible on a clear day from this height was obscured owing to the landscape being clothed with a dull misty grey monochrome. We had to be content with the imaginary review of what some geologists have called " The Straits of Malvern," bounded by the Malvern and Cotteswold Hills, with Bredon and other outliers standing out as islands; of the former marine conditions which separated Wales from England; of the probable physical changes by which the Principality had become united as Great Britain; and of the massive erratic boulders from Cumberland and Scotland distributed over the Midland Counties by the agency of Ice.

Bredon Hill lies north-east of Bredon Railway Station, from which the summit is about three miles distant. The station stands about 100 feet above sea-level, and near the south-western end of the inner rampart of a camp at the summit of the hill there is a Bench Mark giving the elevation at 977·6 feet.

Bredon Hill, an outlier of the Inferior Oolite, is chiefly in Worcestershire, but a tongue of Gloucestershire projecting northwards includes within that latter county the summit of the camp on the hill-top. The hill has been often visited by the Naturalists of Gloucestershire and Worcestershire. Numerous reports are chronicled in the " Transactions of the Worcestershire Naturalists' Club." The geology of the district round Bredon Hill, by Rev. W. S. Symonds, F.G.S., as given in an address delivered by him on August 4th, 1873, appears on pages 204 to 209 of the " Transactions of the Worcestershire Naturalists' Club."

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The approach to the top of the hill leads through a dry foss and over a huge rampart before the inner vallum of an ancient Camp is reached. Upon the inner vallum stands a ruined shell of a square pillar-like building, said to have been erected at the end of the 18th century by Mr. Parsons, of Kemerton, as a summer-house upon the site of a former pyramid of stones, or cairn. The skeleton remains showing one room above another. The area of the Camp is said to be 25 acres.

Near the ruined building is a deep hollow, suggestive of a disused quarry, in which stands out prominently a huge monolith, known under various spellings as the "Banbury" or "Bambury" Stone. It is generally roundish in form, somewhat flat at the top, about 20 yards in circumference, and 14 feet in height. Concerning its history, connections, and derivation of its name the wits of archæologists have been much exercised, and numerous conceptions evolved. Some have attempted to associate with it ancient religious rites; some have gone far afield for its etymology. We are content with seeing in it a mass of Oolitic débris cemented together by carbonate of lime (originally surrounded by Lower Freestone, which has been removed by quarrymen), similar in formation to that of "The King and Queen" monoliths observed nearer the base of the hill, and probably deserted by the practical quarrymen as useless for their purpose.

To those who would learn further concerning Bredon Hill we would recommend the perusal of Excursion VIII, on pages 165 to 190 in "Pictures of the Malvern Hills," by Edwin Lees. On page 177 he suggests the probability of superstition of healing in connection with the passing through the cavity between the "King and Queen Stones." On page 178 he records the little circular tumulus occupied by a small plantation which we passed on our ascent about three hundred yards before reaching the "King and Queen Stones."

With reference to the "Bambury Stone" on the top of the hill, he refers on page 180 to Bryant as the authority for sanctified or anointed rocks being designated under the title of Amber—Amber, ambre, ambrey, bambrey, bambury, banbury.

The late Mr. Allies wrote a learned disquisition to prove that the correct spelling was Ambury; the same term as found in Amesbury or Ambresbury, near Stonehenge, and in other places; and that in all instances it signified "anointed." On the authority of Dr. Stukeley it was a patriarchal custom to anoint stones or temples dedicated to divine worship with ambrosia, or sweet-scented oil.

The most recent contributor comes to the rescue of the puzzled etymologists with the suggestion that the word may be derived from pen and bury, thus making the original name Penbury.*

*See infra.—Notes by Mr. Richardson on page 68.

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Sunshine had continued for a considerable period, and imparted agreeable warmth. The mist still obscured the horizon and the valleys of Severn and Avon. Near the skeleton of the Tower the members assembled to hear Mr. Richardson discourse upon the Geology of the district, the results of Denudation, and the Development of Rivers.

Thanks having been given to Mr. Richardson by the President, the party commenced their descent of the hill by a somewhat similar route to that of the ascent in the morning.

As a special favour the 4.54 p.m. fast train from Cheltenham, due at Worcester at 5.32 p.m., was stopped at Bredon (Midland Railway) at about 5.10 p.m.

A few of the members, the earliest arrivals at the station, found time, some to visit the church, others to inspect some gravel-pits in a neighbouring field before taking their seats for the return journey.

The papers prepared for the day, and natural history observations are now given.

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THE RESULTS OF DENUDATION AS SEEN FROM BREDON HILL.

By L. Richardson, F.G.S.

The panoramic view obtained from near the ruined tower on the inner vallum of the camp on the summit of Bredon Hill is one which it would be difficult to surpass. The casual observer remarks upon its extent and the contrast of hill and vale, but the practical mind requires an explanation for the phenomena presented, and finds the answer summed up in the word "denudation."

The term "denudation" is explicative of the degradation of the land surface by natural causes, whether they be marine or sub-aërial. The agents of sub-aërial denudation may be separated into two classes; first, those which exert their influence over the general surface of the country, such as rain, frost, and that more extended action which is known as weathering; secondly, those which exert their influence along special lines, such as streams, rivers, and glaciers. The work done by the former class of agents may be termed "general denudation," and by the latter "special denudation." Professor C. Lloyd Morgan, F.R.S., in an interesting paper on "Sub-aërial denudation and the Avon gorge," observed that the vertical contouring of a district "is due to the differential action of general and special denudation on rocks of various powers of resistance." Thus, whilst the erosion of the coast is horizontal and leaves headlands, that of the land surface is vertical, and leaves hills.

Bearing these observations in mind, let us inquire into the reasons for the physical features of the district around Bredon Hill. The hill is geologically an outlier of the Cotteswolds. Being some distance from the main hill-mass a fine view is obtained of those hills, and of the low ground bearing the names of the vales of Berkeley, Gloucester, and Evesham. The Cotteswold Hills, composed of Jurassic rocks, form a tabulated promontory terminating northwards in Ebrington Hill, and gradually expanding southwards. Ebrington Hill is situated a little to the north of east of Bredon, and from this point the Cotteswolds trend in a south-westerly direction. The quarried face of Cleeve Cloud—the culminating point of the range—constitutes a well-known landmark, and is seen above Nottingham Hill, and a little to the left of Oxenton. Between this latter hill and Alderton is Stanley Hill, and to the east again is the Charlton Abbots valley, at the northern end of which is situated Winchcombe, the capital of ancient Mercia, and interesting as being the first place in England where the tobacco plant was grown. The next easily found landmark is Robin's Wood Hill near Gloucester, with Churchdown Hill apparently, from this point of view, a little to the east. Both these hills are outliers, the former being capped by the Inferior Oolite. The smoke of Cheltenham, the modern metropolis of the vale, helps to determine the position of the far-famed Leckhampton

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Hill, at the back of which is the reputed source of the Thames. On a clear day the silvery streak in the far south-west marks the Severn estuary. A little to the west are the hills of the Forest of Dean composed of Palæozoic rocks. May Hill, which gives its name to certain beds of the Silurian system, may be recognised by the isolated clump of trees on its rounded summit, and is the next hill to the north. Between May Hill and Chase End Hill is a comparatively low-lying area occupied by the Triassic Sandstones, across which flows the River Leadon. In the north-west the Malvern Hills stretch before us with entirely different forms from those seen on the eastern limit of the vale. They stand as sentinels of another country where Palæozoic rocks predominate, and consequently of a district having a very different physical configuration. "When seen from the low ground of the valley of the Severn," observed Lord Avebury, "they present one of the most striking features in the interior of the kingdom." Over the southern end of the Malverns, and the northern portion of the low-lying area occupied by the Triassic rocks in the neighbourhood of Bromesberrow, are seen the hills caused by the differential denudation of the Woolhope dome. Facing northwards, what a lesson we have of what denudation can accomplish. In the distance may be occasionally seen prominent hills composed of rocks very different to those forming the broad undulating expanse below us.

Although the hills now seem to rise along the skyline as they did long centuries ago, yet attentive observation shows us that the surface of a district is not now exactly what it used to be. And if in a century, or a decennary, or even a year, changes can be noticed, how the physical configuration must have changed during the geologic past; since the time when the area was last elevated from beneath the sea in which were accumulated the newest "solid" strata which probably extended over this district. Bredon Hill is capped by the Inferior Oolite, but only the four lowest subdivisions of that series are present, namely, the sandy beds of the hemera *scissi*, Lower Limestone, Pea-grit-equivalent, and Lower Freestone. These attain a thickness of over 100 feet, but in order to complete the series at least another 100 feet of strata would have to be added Above the Inferior Oolite were deposited in ascending order the Fullers' Earth, Stonesfield Slate and Great Oolite, Bradford Clay and Forest Marble, and the Cornbrash. It is improbable that these had a thickness of less than 150 feet. "Of the western extension of the middle Jurassic strata," wrote Jukes-Browne, "we have no actual evidence beyond the fact that all the marine limestones thicken in that direction—a fact which must be taken as indicating an approach to a coast-line rather than as a proof of distance from it, for the limestones have evidently been chiefly formed from the débris of coral reefs, shallow water molluscs, and Echinoderms. It is in fact highly probable that a shore line fringed with coral reefs ran at this time by the Forest of Dean, May Hill, and the Malverns." Neither do we know of the original western extension of the Oxford Clay, Corallian Beds, and Kimmeridge

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Clay ; but if they maintained the thickness of their present outcrops it is probable that they also spread over this district. After the deposition of the Kimmeridge Clay there was an elevation of this district ; the sea of the Portlandian epoch lying towards the south-east. At a later epoch the Purbeck Beds accumulated in a series of shallow lagoons, and, as time went on, the Lower Wealden Beds were formed in a fresh-water lake on the site of the old lagoons. Subsidence then set in, and the Upper Wealden Beds were deposited in the lake—considerably broadened by the subsidence—which was finally submerged beneath the waters of the returning sea. The movement of subsidence continued, and gradually the seas of the successive epochs of the Cretaceous period crept towards this district, until at the close of the Chalk epoch it was deeply submerged below that ocean. But during the long period of time which elapsed since the district was elevated and became dry land at the close of the Kimmeridgian epoch until it was submerged in late Cretaceous times, a vast quantity of material was removed by sub-aërial denudation—assisted by marine at the beginning of the elevation and during the subsidence. How much material was removed during this terrestrial period it is, of course, impossible to say, but that it was very great is evident. During the formation of the Chalk it would appear that little of England and Wales could have remained above the level of the ocean, for, in addition to the great thickness of rock accumulated it must be remembered that it is a deep sea deposit, and is not formed at the present day in water of less than 400 or 500 fathoms. A gradual upheaval then took place, and this district was elevated above the sea. Probably at no subsequent period has it been entirely submerged ; the seas of the successive epochs being situated towards the east.

These remarks may seem to deal solely with the geography of the past, and to have little in connection with the title of this paper. My object has been, however, to show that not only were the strata now forming the Cotteswolds once continuous across the Severn Valley, but that there were other deposits of great thickness above them. I am inclined to think that sub-aërial denudation—as the prime factor in outlining the present physiography of this district—first exerted its influences at the time when the area was upheaved at the close of the Cretaceous period. At that time there was a great Chalk plain dipping slightly to the south-east. In so late a period as that of the Oligocene we know that sub-aërial denudation had not laid bare the Jurassic rocks, for the materials out of which the former beds are constructed appear to be the detritus of chalk, granite, and Palaeozoic rocks, and not a single pebble of any Jurassic rock has been found in them. The exact geologic structure of the plain, however, whereon our present river system had its origin is doubtful, but it is obvious—from the long period during which it was subject to sub-aërial denudation—that it must have been of a very diverse stratal composition.

Twenty years ago Dr. T. S. Ellis, of Gloucester, in a paper read before the School of Science Philosophical Society "On some features

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in the Formation of the Severn Valley, as seen near Gloucester," drew attention to certain facts which have become in this district the basis of that fascinating and important theory, the Development of Rivers. The important statement Dr. Ellis made was, "If we could have it admitted that the trend of the country was originally to the east, before the present valley was formed at all, following a slope as the Cotteswolds now dip, then one could imagine a stream flowing through the gap between Malvern and May Hills along the line of the Leadon, and escaping over the present Cotteswolds at Witcombe, so first marking out one of the west to east streams of which apparent signs remain." The chief argument in support of this theory is found in "the peculiar course of the tributaries of the Severn in our district." Nearly all those—and most of the exceptions may be explained—on the left bank flow towards the Severn in a direction against the flow of that river; in other words they flow from south-east to north-west, whereas we might have expected that their direction would have been from north-east to south-west. First of all, then, there was an extensive plain with a slight prevalent dip to the south-east, bounded on the south by a range of hills—the anticlines of the Mendips, of the vales of Pewsey and Kingsclere, and of the Weald. Along the northern side flowed the main river, and into this approximately west and east stream those coming from the north and north-west discharged themselves. These original streams flowing along the dip slope are technically termed *consequents*. The areas intervening between them had to be drained, and accordingly streams known as *subsequents* were commenced; generally along the strike or at right angles to the dip. As time went on these subsequent streams invaded the drainage area of the neighbouring consequent, and eventually that consequent which could give the quickest fall in the shortest distance obtained, by means of its subsequents, the water of the other consequent. Such phenomena were probably obtained in West and Central England, but then the ingression of the River Severn brought about a reformation. We must picture the rivers flowing over the area, which in its excavated condition is known as the Severn Valley, and joining the Thames system. Gradually working its way backwards from the south-west was the River Severn, capturing the original consequents, and since it could give a quicker fall to a lower level, that portion of the consequent to the west of the point, or *elbow*, of capture, was diverted into the capturing river; whilst that to the east had to take its rise at some point further to the south-east. The area between the Severn and the new source of the beheaded consequent had to be drained, and thus a stream flowing against the dip was commenced. This anti-dip stream is termed an *obsequent*, and usually starts in the old consequent valley immediately to the east of the elbow of capture—i.e., in this district. In proportion as these obsequent streams cut backwards the sources of the consequents had to retreat, and thus the Cotteswold escarpment was initiated. Let us apply these remarks to a river which we will call the Severn-to-Coln stream. As a consequent it probably flowed through the Hollybush Pass, past

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Longdon, thence along the line of the Severn to Tewkesbury, from which town it followed the course of the present Swillgate to Cheltenham, and after passing through the Chelt valley joined the Coln near Andoversford. When this river was captured by the Severn that portion to the west of the elbow of capture had its waters diverted into the Severn, whilst that to the east had to take its rise further to the south-east. The intervening area was drained by an obsequent stream initiated in the old channel of the consequent immediately to the east of the elbow of capture: that obsequent is the Swillgate stream. The backward growth of the Swillgate has been retarded by the Chelt—a stream giving a quicker fall to a lower level and in a shorter distance. A network of rivers was thus developed, all engaged in lowering the surface of the district. Many of the breaches in the escarpment of the Cotteswolds were excavated by streams rising further to the north-west, whilst some of the larger valleys were excavated by *through rivers*. Thus, whilst the noticeable dry valley running north from the Severn Springs at Cheltenham was formed by a stream rising a little distance further in that direction, the valleys of the Chelt and the Frome were excavated by large through rivers. The valley at the northern end of which Winchcombe is situated was excavated by a subsequent tributary of the Severn-to-Coln river, by which the latter obtained the head waters of the Windrush. The Warwickshire Avon, as has been pointed out by Mr. S. S. Buckman, F.G.S., is a subsequent either started or strengthened by the Severn after the capture of the Severn-to-Coln river. Flowing into it on the left bank are several obsequents, the most important of which in the area under consideration is the Isborne. This stream is gradually working its way backwards into the Charlton Abbots Valley, and causing a retrogression of the source of the Coln. Although many of the outliers are more or less affected by faults, I do not think that the dislocations are the prime causes of their insulated condition. Churchdown, Robin's Wood, and Stanley Hills are outliers, but they are not affected by faults. I think that the outliers of this district, faulted or otherwise, are remnants of those portions of the country which have not come under the influences of special denudation to the same extent as the others. There is little doubt that if sections were more numerous in the level surface of the vale, the Upper Keuper and Lower Liassic strata would be found to be considerably more faulted than they are represented to be on the Geological Survey Map.

The escarpment formed by the junction of the Upper Keuper Marls and the Rhaetic affords an excellent example of differential denudation, the erosion of the marls proceeding at a more rapid pace than the Rhaetic, owing to the presence in the latter of several hard bands, and being capped by the limestones occurring at the base of the Lower Lias. The scenic aspects of districts composed of Upper Keuper Marls are often very tame, but the area to the west of the Severn is certainly not devoid of beauty. Of differential denudation there is a good example at Eldersfield. In this neighbourhood, as will be seen

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on referring to the Geological Survey Map, the Keuper Sandstone, a bed of rock from 10 to 20 feet in thickness which occurs about 215 feet below the base of the Rhaetic, has been thrown into a series of flexures, and whilst to the north of Eldersfield it forms a basin towards the centre of which is situated the little Liassic outlier of Berrow; at Eldersfield the converse phenomenon, a denuded oval dome, may be studied; a conspicuous hill capped with the sandstone being left towards the centre. The outcrop of the encircling sandstone constitutes a very well marked feature on all sides except the south. All the hills capped with the sandstone in this area constitute prominent features. But to study the product of differential denudation it is not necessary to go far, for the north face of Bredon illustrates it admirably. Here we have the steep escarpment formed by the four lowest divisions of the Inferior Oolite series, and a long slope composed of clays—the equivalent of the Cephalopoda-bed, Cotteswold Sands, and Upper Lias—resting upon a terrace formed by the "rock bed" of the Middle Lias. Similar phenomena are obtained on the flanks of the Cotteswolds as can be easily seen from Bredon. At Bredon, on the north side, we have exemplified special denudation: small obsequent streams having cut through the Marlstone and formed valleys separated from each other by promontories capped with that rock. Still nearer at hand is the "Banbury Stone." To account for it various explanations have been given—a product of denudation, or a portion of the roof of a cave which has fallen in. Neither of these suggestions, however, appear to be probable. We have seen that the Inferior Oolite of this hill is exceedingly disturbed and much broken up. By infiltration of carbonate of lime some of this shattered oolite has been cemented together into a kind of breccia, and not being of much use has evidently been left by the quarrymen who excavated the hollow.

The hills composed of Pre-Cambrian and Palaeozoic rocks, such as the Malverns, May Hill, and the hills of the Forest of Dean, have been very considerably sculptured by post-Cretaceous denudation, but the greater amount was probably effected in post-Carboniferous pre-Rhaetic times: this was certainly the case in the Bristol district. All the various agents of denudation have played their respective parts in sculpturing the Pre-Cambrian and Palaeozoic rocks, and after being buried beneath Mesozoic strata these have been stripped of their covering and still further denuded.

It will have been noticed that marine denudation has not been mentioned as having played any part in the excavation of the Severn vale. There is no evidence for the supposition. Professor Hull, F.R.S., has described "beaches" on the flanks of the Cotteswolds, but their constituents are not rounded and do not contain any marine shells. General denudation sufficiently accounts for such accumulations. Too much stress must not be laid, however, on the non-occurrence of marine

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shells for the infiltration of water containing carbonic acid might have removed all traces of them. These "raised beaches" occur at all elevations. The superficial deposits of sand and gravel might be quoted as evidence of the submergence of the vale in glacial times, but these again may probably be referred to river action. It would appear, then, that special denudation is responsible for the excavation of the Severn Valley and the origin of the Cotteswold escarpment, and it is not difficult to point out some of the changes it will effect in the future.

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NOTES ON THE GEOLOGY OF BREDON HILL.

By L. Richardson, F.G.S.

Bredon Hill is an outlier capped by the Inferior Oolite, but only the four lowest subdivisions are preserved; the others having been removed by denudation. In the Cotteswold Hills around Cheltenham these four lowest subdivisions in descending order are (1) Lower Freestone, (2) Pea-grit, (3) Lower Limestone, and (4) sandy beds characterised by an ammonite known as *Tmetoceras scissum*. Bredon Hill is, moreover, an outlier of the Upper Lias, and according to the Geological Survey classification of the Middle Lias also. It is very difficult to obtain the correct sequence of deposits constituting each of the subdivisions of the Inferior Oolite here owing to the very disturbed condition of the strata. H. E. Strickland procured fourteen species of fossils from the Oolite of this hill, but remarked that it was rare to find them in a sufficiently perfect state to fit them for cabinet specimens.* Professor E. Hull, after commenting upon the disjointed state of the Oolite, observed that the basement beds consisted of highly ferruginous calcareous sandstone, and owing to the absence of fossils—except some small fragments of *Pentacrinus*—it was impossible to say whether or not they might occupy the horizon of the Cephalopoda-bed—a deposit which occurs below that characterised by *Tmetoceras scissum*. "The Pea-grit being absent," wrote Professor Hull, "these beds are succeeded by, or pass into, those of the Freestone series.†" With regard to the fault on the south side of the hill—which was mapped and determined by Mr. H. H. Howell—Professor Hull observed, "If a person takes up a position at some distance either to the east or west of this outlier, he will obtain at a glance the evidence upon which the existence of a fault traversing the southern side of the hill has been determined. He will observe that upon the north side the Marlstone rises from the plain in bluffs, which are succeeded by the more gentle slope of the Upper Lias, and finally by the Inferior Oolite, which attains its greatest elevation of 979 feet at Bredon Tower. From this point the surface of the hill, which corresponds to the dip of the Inferior Oolite, has a gentle inclination southwards until it reaches the plain at the village of Overbury at a level nearly the same as that of the base of the Marlstone on the north side of the outlier."‡ The evidence for this fault, continued Professor Hull, is strengthened by the fact that the Marlstone is absent at Westmancote and Overbury.

Dr. H. B. Holl made some important observations with regard the Pea-grit, and observed that its absence at Bredon was only true as regards its pisolitic structure.§ Around Cheltenham these pisolites are like crushed peas, and this fact obtained for the beds the name of Pea-grit. Dr. Holl recorded *Rhynchonella cynocephala* from blocks of

* "Memoirs of H. E. Strickland," p. 82. † Mem. Geol. Surv., "Geology of the Country around Cheltenham," p. 41. ‡ *Ibid*, pp. 76, 77. § Quart. Journ., Geol. Soc., vol. xix. (1863), p. 315.

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hard limestone below the brow of the eastern extremity of the hill above Ashton-under-Hill, but was unable to find the bed *in situ*, or to offer any suggestion as to its probable stratigraphical position. Professor Judd has given considerable details, and remarked that in an old pit opposite to Kemerton Castle we find the upper beds to be composed of white freestone, passing downwards into a ferruginous rock of the most variable character.* A summary of the information obtained by previous investigators is given in Vol. IV. of the "Jurassic Rocks of Britain"†

No sections of the Upper Lias have been recorded. Mr. Howell estimated its thickness at 100 feet or more.

The "rock-bed" of the Middle Lias is frequently exposed, and it has been extensively quarried above the village of Ashton-under-Hill. Mr. H. B. Woodward has given a section of one of these quarries in Vol. III. of the "Jurassic Rocks of Britain."‡

Such is the resumé of the work accomplished by former investigators. A very short time spent in examining the Inferior Oolite of this outlier is sufficient to demonstrate its disturbed condition, and not only is this the case along the edges but in the very centre of the area. A number of causes have combined to produce this result. Mr. H. B. Woodward is disposed to think that the excessive weathering of the Oolite may belong to Glacial times, and on p. 462 of Vol. IV. of the "Jurassic Rocks of Britain," gives a wood-cut of a section in one of the quarries in illustration of the appearance presented by these deposits. A reference to the Geological Survey Map shows that Bredon Hill occupies a position at the extremity of a syncline, the southern end of which is presumably faulted. The deposit immediately underlying the Inferior Oolite is a clay, consequently small landslips are of frequent occurrence. The Oolite would move along the dip slope, and the dips being in the many directions resultant upon the position of the clay at the extremity of a syncline, it follows that the inclinations of the disturbed Oolite would also be in all directions. Moreover, the shattered appearance of the Oolite is in part due to the dissolution of the calcareous matter cementing the arenaceous deposits which here constitute the base of the Inferior Oolite series. The correct sequence of the Inferior Oolite deposits at this locality has always been a matter of much uncertainty. Recently, however, I have been able to construct the sequence from the section obtainable in the east side of the large quarry distant about a mile to the north-west of Overbury Church (fig. 1). The continuity of the sequence of the deposits exhibited in this section (fig. 2) is interrupted by a fault. On the north side the Lower Freestone is seen resting upon strata of the Pea-grit Beds; the top beds of the latter consisting of hard, yellowish limestones, full of fragments of the spines and plates of echinoderms and crinoids. Capping the projecting mass of rock—separated from the east face of the quarry by a small fault—

* Mem. Geol. Surv., "Geology of Rutland" (1875), p. 14. † Mem. Geol. Surv. (1894). pp. 138, 139.
‡ Mem. Geol. Surv. (1893), p. 217; *vide* also Proc. Cotteswold Club, Vol. X., p. 211.

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similar yellowish limestone is seen, and passes downwards into a shelly development. Specimens of *Terebratula simplex*, but only the pedicle valves, are abundant. The shelly development is best exposed in the west side of the southern portion of the quarry, and contains *Terebratula simplex*, *Ter. plicata*, *Rhynchonella subangulata*, *Rhyn. oolitica*, *Zeilleria circularis*, *Pygaster semisulcatus?*, *Diastopora*, *Spirepora annulosa*, *etc.*; and ossicles of *Pentacrinus*. About two feet of hard yellowish-white oolitic limestone are visible below the Pea-grit; the latter rock attaining a maximum thickness of about 14 feet. On the south side of the fault the shelly strata of the Pea-grit are inclined at a high angle, and rest upon a massive deposit of yellowish-white oolitic limestone, thickly-bedded in its upper portion but becoming flaggy below. This deposit, which occupies the stratigraphical position of Witchell's Lower Limestone, is 34½ feet thick. The whitish flaggy development is seen capping the promontory on the opposite side of the quarry, and passes downwards into brown arenaceous strata, very ferruginous in places, and becoming more compact towards the base. This arenaceous rock—also containing numerous fragments of sea-urchins—is exposed for a thickness of 13 feet. To the floor of the quarry is about 7 feet, and to the water-retaining bed from this point—as proved in an old well—is about 8 feet. Thus the *Scissum*-beds appear to be about 28 feet thick here.* Opposite Kemerton Castle, and again about 200 yards to the north-west, the same beds are well exposed. From evidence obtained at the latter section a thickness of about 33 feet was assigned to the strata, which contain a few *Belemnites*, *Rhynchonella cynocephala*, and *Terebratula euides*. The section afforded in the west face (fig. 3) of the northern portion of the large quarry shows the Pea-grit-equivalent—capped by a considerable thickness of Lower Freestone—faulted against the *Scissum*-beds, which are capped by a little Lower Limestone.

With regard to the rest of the hill—taking the strata in descending order—the Lower Freestone has been extensively quarried to the west and north of Overbury Park Wood and above Conderton. When the Pea-grit-equivalent cannot be observed in a section exhibiting "free-stone" beds it is often very difficult to differentiate between the Lower Freestone and the Lower Limestone, and this remark applies to the quarry a little over half-a mile N.E. by E. of Overbury Church. About half-a-mile N.E. of Conderton there are several disused quarries in the Lower Freestone, but that rock occurs mainly in the form of débris, some portions of which are cemented together by infiltrated carbonate of lime. The writer obtained from this locality two specimens of *Terebratula fimbria*. The same beds have been worked near Bredon Tower.† The "Banbury Stone" is a mass of Lower Freestone rubble cemented together by infiltrated carbonate of lime The "King and Queen Stones" are another example of the same phenomenon.

* *Vide* Geological Magazine, Nov., 1902.

† This tower was erected at the end of the 18th century by Mr. Parsons, of Kemerton.

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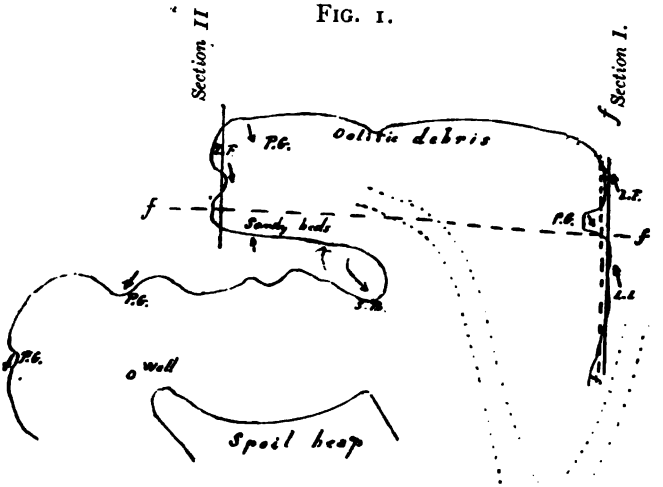
SKETCH PLAN OF THE LARGE QUARRY ABOVE WESTMANCOTE.

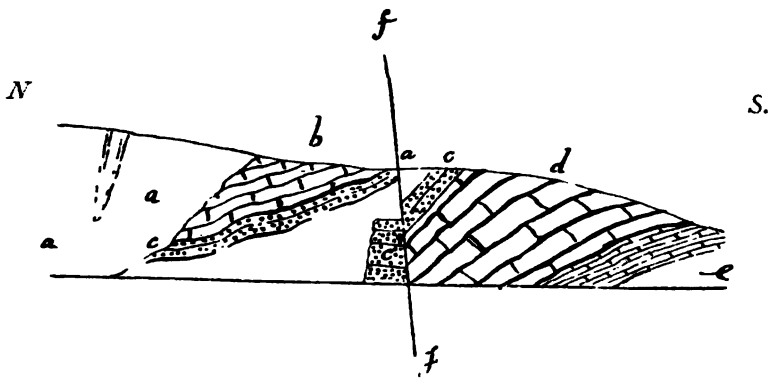
To face page 64.

FIG. 1.



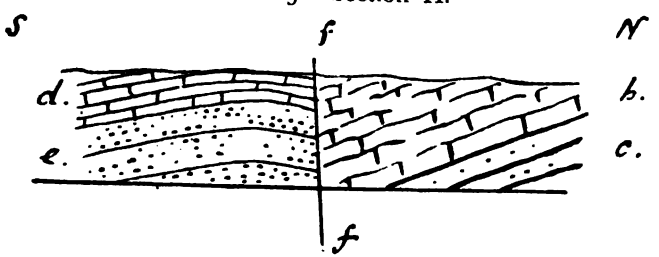
L.F. Lower Freestone. *P.G.* Pea-grit-equivalent.
L.L. Lower Limestone. *S.B.* Sandy beds *(Scissi)*.
f.f. Faults.

FIG. 2.—Section I.



a. Oolitic débris. *b.* Lower Freestone. *c.* Pea-grit.
d. Lower Limestone. *e.* Position of Sandy beds *(Scissi)*.

FIG. 3.—Section II.



b. Lower Freestone. *c.* Pea-grit-equivalent.
d. Lower Limestone. *e.* Sandy beds *(Scissi)*.
f.f. Fault.

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The Pea-grit-equivalent—in addition to the exposures in the large quarry—is worked to the west of Overbury Park Wood, and tumbled masses may be seen on the north face of the hill below the tower. From these tumbled blocks—some of which exhibited the typical lithic structure—I have obtained numerous specimens of Polyzoa and *Rhyn. subangulata*, and *Rhyn. oolitica*. In a quarry a quarter-of-a-mile N.N.W. of the large quarry already described, still more extensive quarrying operations have been carried on, and here the Pea-grit-equivalent—replete with organic remains, chiefly crushed Brachiopoda—is visible resting upon a great thickness of Lower Limestone. This term Lower Limestone was applied by Witchell to certain strata which rest upon the sandy ferruginous limestones of the same author, the latter being now known as the *Scissum*-beds. Lithologically the Lower Limestone is more crystalline than the well-known Cheltenham building freestone. In the Stroud area these strata are from 20 to 30 feet thick, but at Bredon the usual thickness of the Stroud area is exceeded.

The deposits of the hemera *scissi* are also unusually thick here. The characteristic ammonite *Tmetoceras scissum*, which is most distinctive, has not been recorded, but—as in the Cotteswold Hills around Cheltenham—the Brachiopoda have to perform the function which ammonites serve in the Dorset-Somerset area: ammonites being very rare in the Inferior Oolite of the Cotteswolds.

Between the Inferior Oolite and Upper Lias there are usually present in the counties of Gloucester, Somerset, and Dorset, certain yellow sands with a capping of marly limestone, known in Gloucestershire as the Cotteswold Sands and Cephalopoda-bed respectively. In correlating the deposits seen at various localities the old school of geologists placed much reliance upon lithic structure; so that, as the Inferior Oolite rests upon a clay deposit at Bredon Hill, and the clay is similar lithologically to that of the Upper Lias, it was thought that the Cotteswold Sands and Cephalopoda-bed were absent here, and the result has been that on the Geological Survey Map the Inferior Oolite is represented as resting directly upon the Upper Lias.

Several years ago Mr. S. S. Buckman, F.G.S., obtained ammonites indicative of that zone of the Cephalopoda-bed characterised by *Grammoceras dispansum*. Classing the *opalinum*-zone of certain authors with the Gloucestershire Cephalopoda-bed, and associating with them the Cotteswold Sands, we have a group in which Mr. Buckman recognises eight ammonite zones, viz.: those characterised by *Cypholioceras opaliniforme*, *Grammoceras aalensis*, *Dumortieria Moorei*, the genus *Dumortieria*, *Grammoceras dispansum*, *Grammoceras striatulum*, *Haugia variabilis*, and *Lillia* sp. Now at Haresfield Beacon, near Gloucester, ammonites of a *dispansum*-type (such as were found at Bredon) may be obtained from the Cephalopoda-bed. But the Cephalopoda-bed occurs—as easily seen at Haresfield—above the Midford or Cotteswold Sands; and the geographical extent of these sands is shown on the Geological

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Survey Map. At Bredon Hill, however, the Inferior Oolite is represented as resting directly upon the Upper Lias clay without any intervening Midford Sands. The fact is, that at Bredon, clay (with a few limestone nodules) was being deposited whilst sand and marly limestone was being laid down in the Haresfield area. On September 11th, the Cotteswold Naturalists' Field Club visited Overbury, and in the course of the day examined a gravel pit in the village, when further important discoveries of ammonites were made. A visit made by the writer in company with Mr. Buckman resulted in obtaining evidence of the existence of deposits on Bredon Hill of the dates of *Dumortieria Moorei*, and *Grammoceras dispansum*. A considerable number of ammonites were found, chiefly of the latter type. The gravel consists of angular fragments of Oolite and portions of nodules of limestone, and is probably a rain-wash accumulation, that is, it is the débris of the rock on the higher shores of the hill, gradually carried to lower levels by rain, assisted by gravity. It seems, however, rather difficult to believe that some of the large masses of rock were transported in this way or even by a stream, but whatever the means of transport were it is fairly evident that the accumulation is mainly the product of the denudation of the valley in Overbury Park. In addition to the pieces of rock which could be referred to the above two zones, there were fragments of Middle Lias ? and of a rock full of that small brachiopod, *Orbiculoidea*. In the finer material, *Rhynchonella cynocephala*, *Aulacothyris Blakei*, *Rhynchonella tetrahedra*, and *Belemnites* were found in a loose state.

The Middle Lias is well developed, and on the north face of the hill exposures of the "rock bed" are numerous, the outcrop of the bed being plainly indicated by natural features. About one quarter of a mile to the north-west of Bredon Tower, and a little to the east of the road ascending the hill from Woollas Hall, is an excellent exposure of the Marlstone, the section being as follows :—

		Feet.	In.
1.	Brown and grey, flaggy, somewhat arenaceous limestone, *Rhynchonella*, *Belemnites*	2	10
2.	Soft sandy bed	0	5
3.	Hard brown and grey, flaggy limestone, *Paltopleuroceras spinatum*, *Belemnites*, *Rhyn. tetrahedra*, *Pecten æquivalvis*	2	9
4.	Soft sandy bed with a few *Belemnites*	0	10
5.	Hard, brown and grey, sandy limestone; *Amaltheus margaritatus*, *Rhyn. cf. amalthei*, *Waldheimia florella*, *Pecten*, *etc.*; *visible*	1	2

Above Ashton-under-Hill the beds are well exposed, and, as already stated, Mr. Woodward has recorded the section.

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Recently (Oct., 1902) a deep trench has been dug along the road which leads northwards through the village of Overbury. At the southern end the trench was from eight to ten feet deep, but this decreased as the hill was ascended. This was most unfortunate from a geological standpoint, as the writer had hoped to obtain either negative or positive evidence of the existence of the fault as delineated on the Geological Survey Map. However, the trench was excavated in the Lower Lias until within a few yards of the presumed position of the fault, but no evidence of any disturbance was observed. On the occasion of the visit of the Cotteswold Club a particularly fine specimen of *Oxynotoceras oxynotum* was exhibited, having been found whilst excavating the trench near the gravel-pit, whilst a little higher up the road examples of *Deroceras armatum* were found.

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THE BANBURY STONE.

NOTES BY L. RICHARDSON, F.G.S.

In connection with previous observations by Mr. Moore on the etymology of the name applied to the mass of rock in the hollow near the Tower on the top of Bredon Hill, the following may be of interest :—

Jabez Allies said of the Banbury Stone in his book "On the Ancient British, Roman, and Saxon Antiquities and Folk-lore of Worcestershire" (1852), it "is a mass of Inferior Oolite, the same as the rest of the hill, and no doubt was denuded upon the basin being dug, and most probably was preserved for an altar stone (p. 363);" and referring to the hollow in which it is situated he remarked, "I have no doubt that this basin is artificial." Laird in his "Topographical and Historical Description of Worcestershire," describing the "stone," observed, "Near the Prospect House is Bramsbury Stone, an immense mass of rock, but of which there is no traditionary account; and which is, most likely, merely a natural production, without any reference to ancient events" (p. 364). Edwin Lees in his "Pictures of Nature, etc," said that the hollow was "apparently excavated by art" (p. 179). G. F. Playne wrote, "It is probable that a cave, natural or artificial, once occupied the site of this hollow place, having its entrance just below the escarpment, and that these stones, now cemented into a mass, formed a portion of the roof of the cave, and on the falling in of this roof this mass of stone was left in its present position. . . . . The name of Benbury or Penbury, as applying to this camp, probably existed long before this stone was exposed to view" (Proc. Cotteswold Club, Vol. VI., p. 225). Rudder wrote of it as "a stone of prodigious magnitude which the people of that neighbourhood call Benbury Stone." As Mr. Moore remarked, several authors see in the name Bambury the word amber, signifying the anointed stone. If the name was always Bambury, or Banbury, this would be very probable, in fact probably correct; but the name Benbury suggests another derivation. May it not be derived from Pen-bre meaning top of hill, or a hill-top, like Pencoed meaning wood-top, and Pennard in Somersetshire meaning land-top? Bre under Saxon influence would become bury, and Pen being the equivalent of Ben we should have Benbury. The "stone" itself is a mass of Oolitic débris, cemented together by an infiltration of carbonate of lime, and was probably left by those who excavated the hollow as useless. This débris doubtless filled up a fissure in the Lower Freestone and was cemented together by the infiltrated carbonate of lime into a kind of breccia. Possibly when the freestone around was worked, this breccia was left. A similar mass of rock is left in the Rolling Bank Quarry on Cleeve Hill. Accordingly, it may be suggested that the name "Banbury Stone" means "The stone on the hill-top."

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BOTANY.

No record has been preserved of the many interesting plants met with in the course of the day, the following being the only one to add to previous lists by Lees and other members of the Worcestershire Naturalists' Club.

Mr. Spencer Bickham found *Silene noctiflora*, Linn, in fair quantity in a cornfield in Worcestershire. He writes;—"This seems not to have been noticed since 1834, when Dr. Hastings in his "Illustrations of the Natural History of Worcestershire," notes it "In a sandy field behind Birches Grove, Broad Heath." Mr. Lees in his "Botany of Worcestershire," 1867, entirely omits the plant.

One plant seems to have been found in 1893 at Madresfield.

ENTOMOLOGY.

Mr. James B. Pilley informs us that in the second quarry on ascending Bredon Hill numbers of the larvæ of the Cinnabar moth (Euchelia jacobææ) were seen on their food plant the common ragwort (Senecio vulgaris). They are conspicuous objects; the ground colour orange, with black head and rings. It does not appear to be common in Herefordshire.

Mr. Carleton Rea stated that a friend informed him a fortnight previously that he found the butterfly "Marbled white" (Melanagria galathea) common on the hill; this is seldom seen in this county. That now rare butterfly the large Blue (Lycæna arion), which is now chiefly confined to the counties of Devon and Gloucester, is probably a fast decreasing species. On the Cotteswold range it is met with sparingly. He added the information that a boy visited a locality this year where it occurs; each day it was on the wing he caught all he saw, and a collector boasted that in different seasons he had captured 800 specimens. How long the insect will survive such attacks, time only will show!

MINERALOGY.

Presentation of Minerals to Hereford Museum.

The specimens of minerals have been considerably added to by a collection presented through the Woolhope Club by Mr. Alexander Sparrow, of Ross. The specimens are fifty or more in number, and the collection embraces an excellent iron and steel group. Antimony, tin, and copper are also well represented. Amongst various ores are Nickel, Cobalt, Titanic ore (Rutile), Cinnabar, Fluor Spar, Sulphur Nodule, Sulphate of Molybdenum, etc.

By the influence of Mr. Sparrow, a specimen of Schelite has been obtained direct from the Department of Mines at Melbourne, Australia. Scheelite was discovered by Scheel in Victoria. It belongs to the Steel "physic" group, being used like Wolfram for making ferrotungsten: it is frequently called White Wolfram.

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ORNITHOLOGY.

THE NUTCRACKER (NUCIFRAGA CARYOCATACTES) IN HEREFORDSHIRE.

By James B. Pilley.

The occurrence of the Nutcracker in Herefordshire, the first recorded, and a rare visitor to other parts of Britain, is deserving of more than passing notice. The specimen was obtained in the autumn (the usual period of its visits) of 1900, but so much secrecy was observed over its capture that some months elapsed before much information connected with it could be obtained. It was eventually traced to a taxidermist in Cardiff, and as a specimen if not well-authenticated cannot be accepted by ornithologists, correspondence with the honorary librarian of the Cardiff Naturalists' Society was opened to obtain the desired information. In reply to my note to Mr. R. W. Atkinson, he wrote as follows: "I saw the curator of our museum in reference to the Nutcracker, as well as the taxidermist, who still has the specimen in his possession. He assures me the bird was shot in Herefordshire; he had given the place and date to Mr. W. J. Proger, who is at present absent from Cardiff. I will see the latter when he returns, and ascertain all he knows about the matter, and write you again. July 22nd, 1901" On August 20th, I received a letter from the honorary curator, Mr. W. J. Proger, as follows: "Mr. R. W. Atkinson has handed me your letter of July 18th, in which you refer to the occurrence of the Nutcracker in your county. The bird was shot at Credenhill, November 19th, 1900. It was received in the flesh, and was carefully examined by Mr. R. Drane, F.L.S., Dr. Paterson, and myself. We came to the conclusion that the bird had been recently killed, that it had not been kept in confinement, nor had it been kept in a refrigerator. I have not the least doubt the occurrence is authentic, and is of the utmost interest to ornithologists in your county."

Mr. S. King, of Hereford, informed me that it was shot by an employé at Credenhill. There was another with it which escaped. It was brought to him as a rare kind of woodpecker. He also thought such was the case. There can be no doubt of the authenticity of the specimen, and although it is much to be regretted it could not be obtained for our local museum, it is a little satisfaction to know that it will be cared for and may be seen in the Cardiff Museum, for which institution it was purchased.

Comparatively little was known of the habits of this species during the first half of the last century. Yarrell, in his work on British Birds, 2nd edition, published in 1845, states that "This bird exhibits some of the habits of the woodpeckers, and is a connecting link between that family and the crows. They also nest in holes of trees, which they excavate or enlarge sufficiently for their purpose, like the woodpeckers, and this is not the only point of resemblance to that tribe of birds, for

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the middle feathers of the tail are found worn by climbing among the trees and branches of trees."

Very little appears to have been added to the knowledge of British ornithology of the nidification of this species until 1862, when Professor Newton read a paper before the Zoological Society, of which a few extracts are given. "Last year I expressed a hope I should soon be able to give to the Society certain information with respect to the breeding of the Nutcracker. I am now able to exhibit the nest and a young bird received within a few days from Herr P. W. Theobald, of Copenhagen, to whom we are indebted for obtaining facts in regard to the nidification of this mysterious bird. This spring he in company of two friends visited the island of Bernholm. Writing from that island he informs me "After many days spent in the search we found two nests, but were too late for the eggs. We hope to suceeed next year. The nests were in fir trees (Pinus rubra) about 25 to 30 feet high, and were composed of sticks and twigs of larch, spruce, and birch. They were lined with grass. I hope to learn further particulars from Herr Theobald, and I need not say I look forward with great interest to know what the eggs are really like."

Dr. Hamilton, F.Z.S., in the *Zoologist* for 1884 met with the species near the Pass of St. Gothard, and says he had the great pleasure of being able on two or three occasions to watch the habit of mode of feeding of this bird. "I have seen it come down to the hazel trees, pick off a nut, and then fly to a stone and commence breaking it by repeated blows of its beak. Another day I saw a party of six come to a group of fir trees covered with cones, and remain for some time feeding on them. They do not appear to feed on the cones as Crossbills do, but to snap them off first before getting the seeds out; they fly with a slow flight, similar to a jay."

Mr. L. W. Wiglesworth, of Brunswick, writing in 1890, stated that he had received a nest and two eggs from the Hartz Mountains, the only ones in the nest. They had been incubated several days; a similar case of the Nutcracker sitting on only two eggs had been previously recorded. He writes later that "the nest and three others I found at the end of March were composed of twigs of beech, oak and hazel, and lined with grass. They were placed against the stems of spruce firs about 15 feet from the ground. According to the woodman, they invariably build their nest in this species of tree."

There appear to be examples of this species of bird, some with thick bills and other with longer and slender bills; this was supposed to be a sexual difference. In 1889 Herr Leontard Steyneger wrote at considerable length on this subject. He says: "Brehm was the first to clearly define that there were two races of Nutcrackers, but was unable to assign to them distinct habitats." He also admits that having examined a large number of specimens at Bergen and Christiana he was under the impression that there could not be any racial difference as there were examples with thick as well as thin bills. He, however, adds: "After

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the exhaustive manner in which Dr. Rudolf Blasius has treated the question, there is now no room for doubt, as he clearly shows, that the resident bird of Europe is the thick-billed form, while the slender-billed specimens belong to the migratory flocks that invade the West of Europe from Siberia; the latter variety is called *Nucifraga macrorhynchus*.

This species of crow, which at a distance reminds the observer of a magnified starling very much faded, is found in forests and woods in many parts of Europe, principally in the central portions where conifers are numerous. It appears to be an early breeder, and as before mentioned places its nest in a pine tree close to the stem. At the Natural History Museum, South Kensington, there has been added to the admirable series of cases of birds showing their life history one of this species. The case contains a section of the tree, about five feet long, exhibiting the nest *in situ*, together with the pair of old birds. In this instance a departure has been made from the usual habits, as the nest is built in the fork of the tree instead of the side of the trunk. It appears very similar to a jay's, but rather larger, and contains five eggs, which are about the size of a magpie's, and are like very pale varieties of that species. In the egg cabinet of British Birds there is a short series, some of which have the appearance of dark specimens of the chough; like the rook's and jackdaw's eggs, they appear subject to variation.

The mature bird is pale brown, spotted with white markings on the breast and back, wings black. The tail also black with white tips, under tail coverts white. The sexes are very similar. The female appears, however, browner on the wings. The species is rather smaller than the jay.*

This species of crow has not been recorded from Ireland. In Scotland Mr. Macgillivray mentions in his "History of British Birds" three specimens said to have been obtained there, but they do not appear well authenticated. Since that work was written one was shot at Invergarry in 1868, and one in Orkney. In Wales one was shot near Pontypool several years ago; it is in the Cardiff Museum. Mr. E. Cambridge Phillips records one obtained near Swansea, in his "Birds of Breconshire."

It has occurred in the following English counties:—Cumberland, 1854; Devonshire, 1862, 1883, 1889; Gloucestershire near Cheltenham, 1866; Hampshire, 1868, 1870, 1886; Herefordshire, 1900; Kent, 1883, 1885, 1888; Lincolnshire, 1835, 1888; Norfolk, 1844, 1853, 1859, 1864, 1888; Northumberland, 1819; Somersetshire, 1873; Surrey, 1847; Sussex, 1844, 1893, 1900; Yorkshire, 1865.

There are some earlier dates given by various writers, but they are considered doubtful Mr. H. E. Forrest, of Shrewsbury, and Mr. E. Cambridge Phillips, of Bwlch, near Brecon, have kindly assisted me in bringing the above list up-to-date. For much of the information in this paper I am indebted to that storehouse of facts for the ornithologist, "The Zoologist."

* See also Seebohm "Siberia in Asia," pp. 119 and 143.

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TENGMALM'S OWL AND LITTLE OWL.

Mr. James W. Lloyd exhibited photographs of a Tengmalm's Owl (Nyctala tengmalmi) which he has in his possession alive. This specimen was taken in a trap on the Castle Hill Estate, Wolverly, near Kidderminster, on November 17th last. As it was only slightly injured, the gamekeeper kept it alive and disposed of it to Mr. Lloyd.

A small owl, supposed to be of the same species, was shot on December 16th on the adjoining estate, Blakeshall; this he also obtained, but it proved to be an example of the "Little Owl" (Athene noctua).

Tengmalm's Owl is a rare visitor to the British Isles, and its visits are probably accidental. About 20 specimens were obtained during the last century, and this is the third during the present century. Its principal habitat is northern Europe. Wheelwright, who spent several years in Sweden and Lapland, says that in the latter it is the most abundant species of owl next to the hawk owl, and that he rarely went into the forest at night without seeing it hawking after its prey. The call note is a soft musical whistle, and he adds that there did not appear to be any difference in the plumage between the male and female.

There is a specimen of this bird in a case of owls in Hereford Museum.

BLACK TERN (HYDROCHELIDON NIGRA).

Reference to *Transactions*, 1899, p. 225, the most recent lists of Birds of Herefordshire, compiled by T. Hutchinson, gives "A specimen shot on Mynde Pool, 1859," as the single previous record of this bird in Herefordshire.

For the following record of its occurrence at Whitbourne, in the north-east of the county bordering on Worcestershire, we are indebted to Rev. Charles Harington, Vicar of Aymestrey:—

"A Black Tern made its appearance on May 22nd, 1901, at Whitbourne Court. It was seen flying over the moat, occasionally settling upon the stump of a tree jutting out over the water from an island.

It continued all day until late in the evening. About sunset it suddenly rose to a great height, and then flew straight away in an easterly direction.

Morris says that this bird used to breed in the fen district, and gives several instances of individuals having been seen in this country, but he does not mention Herefordshire. He says that they migrate chiefly by night, and I don't doubt but that the bird I saw was migrating and rested here by day."

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The Ordnance Survey Maps for the district are :—

On the scale of 1 inch to 1 mile : Sheet 216 gives Bredon in the extreme north east corner. The adjoining maps are 217 further eastwards ; and 199, 200, for the more northern area.

On the scale of 6 inches to 1 mile, namely, Worcestershire 48 S.E., Gloucestershire 5 S.E. ; also Worcestershire 48 N.E., 48 S.E , and for the more southern districts 55 N.E.

The Geological Map is Sheet 44. There has been no re-issue since 1856.

List of the Members and Visitors :—The Rev. Sir George H. Cornewall, Bart. (President), Lieut -Col J. E. R. Campbell, Col T L. Morgan, Col. T. H. Purser, Reverends C. H. Binstead, E. J. Holloway, Canon R. I. Livingstone, H. B. D. Marshall, A. Pope, H. F. St. John and M. G. Watkins ; Messrs. J. E. Ballard, Spencer H. Bickham, J. P. Brown, W. Brown, J. U. Caldicott, R. Clarke, Truman J. Cook, G. Davies, H. H Edwards, Iltyd Gardner, E. A. Gouring, E. J. Hatton, F. S. Hovil, Herbert Jones, J. W. Lloyd, J. Basil Masefield, W. Pilley, J. P. Sugden, J. Reginald Symonds, with H. Cecil Moore, Hon. Secretary, and James B. Pilley, Assistant Secretary, with the following visitors :— Major General Maule, R.A., Commander C. G Treherne, R.N., Messrs. John Ballard, F. H. Beach, G. C. Brown, from Gloucester, D N Campbell, G. C. Campbell, John Hatton, J. Edward Kirby, from Bristol, F. D. Livingstone, — Livingstone (New College, Oxford), Alfred Nimmo, from London, George Philpott, from Gloucester, and H. G. Sugden, from Steyning, Sussex.

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Woolhope Naturalists' Field Club.

BRITISH MYCOLOGICAL SOCIETY AT HEREFORD.

By the invitation of the Woolhope Naturalists' Field Club the sixth annual Fungus Foray of the British Mycological Society was held in Hereford from Monday, September 22nd to Saturday, September 27th, 1902.

The objects of the Society are: The study of Mycology in all its branches, systematic, morphological and pathological, the publication of annual reports recording all recent discoveries in any branch of mycology, and more especially giving a brief synopsis of the work of European mycologists and the recent additions to the British Fungus Flora. The Association consists of foundation members, honorary members, and ordinary members, the number of foundation members being limited to 100, and that of honorary members to 20, but the number of ordinary members is unlimited. Ordinary members and clubs pay an annual subscription of 10s., and foundation members 5s. There are at present enrolled between 80 and 90 members, chiefly in England and Scotland, but also in Ireland, Wales, and America. The active membership may be put down as about 53, including some of the foremost botanists in Great Britain. Mr. Carleton Rea, B.C.L., 34, Foregate Street, Worcester, is the Honorary Secretary and Treasurer

It may be observed that the study of Fungi carries with it that of plant diseases, which cause so great destruction of timber, cereal crops, etc., and it is only by knowing the life history of the Fungi that the forester, the gardener, the agriculturist, and others can learn how to combat these devastations. A capital idea, also, is the exhibition—which in this case took place in the Woolhope Club Room—of rare specimens, or specimens new to the British Fungus Flora. These, not only representing Fungi collected during the week, but consignments kindly forwarded, were for the public inspection, and displayed plants edible and poisonous, the former largely predominating, It has been a large and most interesting display of beautiful specimens of plant-life, the formation, colour, and properties of the Fungi tending to deep reflection.

Of course, a Fungus Foray is not an unknown institution in Herefordshire. In *Transactions*, 1883, page 97, we read, "This is the 16th year of the Fungus Forays of the Woolhope Club. The first one of which we can find any account was held in the October of 1868, since which time they have been continued without interruption. For some time after they were instituted the Forays of this Club were

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unique, they were not fashionable, however successful they might have been, and no Society followed their example.* When, however, the Woolhope Club came to be celebrated for its Fungus Forays and their repute floated abroad through the Continent of Europe, other societies were inspired with a desire to emulate the Herefordshire Club, and gradually of late years Fungus Forays have sprung up in all directions. If imitation be the sincerest form of flattery, then the Woolhope Club has been flattered, for it certainly has been imitated with some amount of success, although not with equal success, because the plan has been so modified that in most instances the 'imitation Forays' have only been imitations. The whole method has only been followed by the Cryptogamic Society of Scotland and the Botanical Society of France, but the latter only attempted the Forays for about two years, and then they ceased altogether."† The objects which the Woolhope Club kept in view were to bring together the students of Fungi, for social intercourse and exchange of ideas, from all parts of the country, to organise for them excursions on four consecutive days for the purpose of collecting specimens, to provide for them a large room in which to deposit and arrange the Fungi for exhibition, to entertain visitors from a distance, to provide a conversazione for reading papers and discussing kindred topics, &c.

This is a standard of ideas that has worked out well in the past. The year 1902 has marked out the first visit of the British Mycological Society to the cider county, their five previous journeyings having taken place to Sherwood Forest, Dublin, New Forest, Boat of Garten (Scotland), and Exeter. "*Tempora mutantur, nos et mutamur in illis.*" The year 1889 closed the annual Fungus Forays in Hereford after an existence of 21 years. *Transactions*, 1889, pages 378 to 388. A list of the Funguses found in the County occupies pages 444 to 515 of "The Flora of Herefordshire," which was published in 1889.‡ A supplementary list appears in page 11 of "Additions to Flora" in *Transactions*, 1894.

On Tuesday, September 23rd, Dinmore Hill was visited, the members journeying by the 9-20 a.m. train from Hereford. The party comprised Dr. C. B. Plowright (King's Lynn), and his son, Mr. E. T. M. Plowright, B.A., Mr. Carleton Rea (Hon. Secretary, Worcester,) and Mrs. Rea; Miss Annie Lorrain Smith (London), Dr. H. C. Peacock (Newton Abbot), Dr. Watson (Edinburgh), Mr. D. Mackenzie (Glasgow), Mr. C. Hughes (Oxford), Mr. C. P. Bird (Drybridge House, Hereford), all members of the Society, and Mr. H. C. Moore (Hereford), hon. secretary Woolhope Club, who kindly acted as guide to the visitors. This was, perhaps, scarcely so large a party as usually met on the occasion of the

* The Worcestershire Naturalists' Club has for many years held an annual one day foray. The Report of the first season is to be found in *Transactions of the Worcestershire Naturalists' Club*. Vol. I., pp. 51 and 52. Ed.

† Since 1884 the annual fungus forays have been continued with great success by the Société Mycologique de France, which numbers amongst its members all the leading mycologists of Europe.—*Ed.*

‡ For a few additions see *Transactions*, 1892, p. 364.

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annual Foray, but various circumstances kept others away, among the absentees being the President, Professor James W. H. Trail, F.R.S., Professor of Botany in the University of Aberdeen, who wrote that he regretted extremely, that, owing to unforeseen circumstances, it would be out of his power to leave Aberdeen during the week. He had been looking forward to meeting friends at Hereford, and to visiting a district so well known by repute to botanists, but had to relinquish those pleasures owing to a more imperative call.

Permission to examine the woods of. Dinmore Hill had been granted by Mr. J. H. Arkwright. On Tuesday, 23rd September, the examination was made by the party in sections.

Amongst good finds were *Geaster rufescens* Pers., *Lactarius scrobiculatus* Fr., *Leptonia euchroa* Pers., *Marasmius Vaillantii* Fr., and two Clavariæ, new to the British Fungus Flora, namely, *Clavaria Michelii* Rea=*Clavaria fragilis* Holmsk, var. C. *gracilis* Pers., and *Clavaria subtilis* Pers. The latter, however, had been gathered by the Worcestershire Naturalists' Club in the Forest of Dean a few days previously, namely, on 16th September.

Damp weather is of course favourable to the growth of fungi, but so persistently and heavily did rain fall that enthusiasm surrendered to discretion after a five hours' stay in the woods, and the party arrived at Hereford more than two hours earlier than had been originally intended.

At seven o'clock the Annual Club dinner was held at the Green Dragon Hotel. Subsequently the members met in the Woolhope Club Room, where the presidential address was read for Professor Trail, in his unavoidable absence. The paper was received with pleasure, and the members felt grateful to their President for his kindly preparation of it.

On Wednesday, September 24th, in contrast to the wet weather of the previous day, beautiful sunshine was experienced. The members assembled at the portico in front of the Green Dragon at mid-day, and took seats in a conveyance which took them to the woods and grounds of Belmont, etc. The party afterwards drove to Haywood Forest. Time would not permit of examining Merry Hill Common. Amongst the specimens collected were fine examples of *Lycoperdon echinatum* Pers., *Marasmius urens* Fr., and *Hudsoni* Fr., at its original station in the gardens of Belmont. (See *Transactions*, 1873, p. 102, and the two accompanying plates). *Tubaria crobula* Fr., *Boletus castaneus* Bull., *Mycena olivaceo-marginata* Mass., *Pluteus umbrosus* Pers., and *Clavaria dissipabilis* Britz.

On Wednesday evening, at the headquarters, the Woolhope Club Room, the general meeting took place, Dr. Plowright (Vice-President) in the chair. The Rev. W. L. W. Eyre, of Alresford, Hants, was unanimously elected president of the society for the ensuing year, on the proposition of Mr. Rea, seconded by Mr. Charles Plowright. Professor

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H. Marshall Ward, D.Sc., F.R.S., was appointed Vice-President on the proposal of Dr. Plowright, seconded by Mr. C. Hughes, and Mr. Carleton Rea (Worcester) was re-elected Hon. Secretary and Treasurer on the motion of Miss A. L. Smith, seconded by Mr. D. Mackenzie. After seven years of office in the capacity of hon. secretary, Mr. Rea did not offer himself for re-election, but his services were so valued by the society that the wish for his continuance in the position was unanimous. It was decided that the next annual week's Foray should be held at Savernake Forest, with Marlborough for headquarters, and that the date should be the first week in October, 1903. Votes of thanks were accorded to the various officers for their excellent services during the past year.

On Thursday, September 25th, beautiful weather was associated with the society's operations. Rotherwas was visited, and afterwards Dinedor Hill, Dinedor Camp, and Green Crize. Mr. J. Rose, ex-President Worcestershire Naturalists' Club, joined the party to-day. Rotherwas Wood was found to be very greatly overgrown, and only a few specimens could be collected. At Dinedor Camp, and on the way to Green Crize, several interesting objects were discovered.

In Rotherwas Wood Dr. Plowright secured many examples of *Rosellinia clavariæ* Tul., and *Eccilia atropuncta* Pers.; others collected fine specimens of *Cortinarius* (*Phlegmacium*) *triumphans* Fr., *Hygrophorus subradiatus* var. *lacmus* Fr., and *Clavaria stricta* Pers.

In the evening Miss Annie Lorrain Smith contributed a note on *Stilbum tomentosum*. She stated that this species was a small white fungus with a fairly stout stalk, the whole forming a compact globose head. It grows on *Trichia* and some other Mycetozoa. In 1827 it was included by Greville in the British Flora. He recorded the finding of it by Berkeley in Glenfinlas, and went back to Schrader's name even though he considered it to be inappropriate. It had been found growing on *Trichia* in Europe, Ceylon, North America, and Cuba. Her own interest in the fungus was aroused by the difference in the form and size of the spores, which puzzled her in her attempts to classify various specimens. The stalk she had always found to accord with Greville's description, and specimens sent to her from Devonshire and Hampshire tallied with descriptions she had mentioned. The stalks were beset with processes; the spores were globose though smaller somewhat; they were extremely minute. She received still another specimen from Egham, in Surrey, which had a similar stalk, but the spores were oval in form. The difference between the spores of the two kinds of *Stilbum* amounted almost to a specific distinction, but the plants were otherwise so much alike that it seemed better to distinguish the second as a variety. The form with globose spores had the priority; the other she proposed to name var. *ovalisporum*.*

* See Transactions of the British Mycological Society for 1902, page 26.

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Mr. R. H. Biffen, M.A., Cambridge, read a paper on "Some facts in the Life History of *Acrospeira mirabilis*, Berk. and Br." a curious mould fungus found on Spanish Chestnuts.*

A paper was also read on behalf of Dr. Plowright on "Lindroth's Classification of the Uredineæ on the Umbelliferæ."†

The newly-elected President thanked the Woolhope Club for granting the use of the room at the Hereford Free Library buildings, and Mr. H. C. Moore for kindly conducting the party daily, and making the general arrangements for the programme. A resolution was passed requesting Mr. Moore to thank, on behalf of the society, the various proprietors and tenants of the grounds visited for permission given to go over their lands, and those gentlemen who had offered hospitality.

On Friday, September 26th, the charming grounds of Earl Chesterfield, at Holme Lacy, were visited. The deer park and the adjoining woods yielded several interesting species, including *Pleurotus applicatus* Batsch., *Entoloma Saundersii* Fr., *Stropharia caputmedusæ* Fr., *Cortinarius (Phlegmacium) balteatus* Fr., *Paxillus giganteus* Fr., *Hygrophorus fornicatus* Fr., var. *clivalis* Fr., *H. calyptraeformis* B. and Br., *H. nitratus* Fr., and *Daldinia concentrica* Ces. and de Not. on birch.

During the week about 400 species were collected and were examined and drawings made in the Woolhope Club Room. The visit of the Mycological Society was distinctly enjoyable and successful. Amongst the finds were three or four Fungi new to Britain.

FUNGI NEW TO BRITAIN.

A mould new to Britain, *Monilia candicans* Sacc., from Belmont, has been subsequently reported by Miss Lorrain Smith. To which Mr. Carleton Rea adds *Stysanus fimetarius* Karst. on decaying vegetable matter, also found at Belmont.

The *Clavaria subtilis* Pers., which had a week previously been found in the Forest of Dean, and *Clavaria Michelii* Rea, both found at Dinmore, have been already mentioned.

To the above must be added *Sclerotina Fuckeliana* Fuck., grown from sclerotia that were causing a disease on the stems of gooseberry bushes.

All the above are described in pages 31 et seq of "Transactions of the British Mycological Society" for 1902, in the long list of Fungi new to Britain.

* Transactions of the British Mycological Society for 1902, page 17, with accompanying Plate 2.
† Ibid., p. 26.

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Anent the study of "Fungi, past, present, and future," one feels strongly inclined to quote the remarks of Dr. Cooke, who years ago drew comparisons between the position of the study of mycology some thirty-five years then gone by and at the then present day. At the time he was referring to, say 1865, books on the subject for the use of students were few and inefficient. The "Handbook of British Fungi" did not make its appearance until six years later. This, he pointed out, was a sort of "middle ages" for mycology. Those who pursued it were persecuted, and pestered with the inquiry of "What good is it?" "Will it put money in your purse?" The only possible answer was, that it enabled a person to distinguish good from bad, as esculents, and that as a means of acquiring knowledge it would ultimately secure its own reward, in addition to the pleasure it gave to all lovers of nature to explore her mysteries, without regard to whether it was profitable or not. The first explicit knowledge of the modes of reproduction, and the life history of the Peronosporeæ, those destructive parasites of field and garden plants, was not expounded until 1863, and it was some time after this that the result of the investigations was even known, much less appreciated, in this country. The same might be said of the Uredines. "A fungus hunter is not perhaps a competent judge in diseases which have baffled the wisest and shrewdest of professional men, but we (that is to say, mycologists) can claim to have admitted an immense amount of light into the darkest corners of medical practice, and to have diverted investigation into a new and apparently the most feasible and important channel. It is not fashionable now," quaintly added that wonderfully acute and thorough scientist, Dr. Cooke, "in the face of such success, to sneer at the mycologist as a useless member of society, or to inquire concerning his hobby, 'of what use is it?'"

Then one comes to the unexampled success attendant upon the study of fungi, and has to "read, mark, learn, and inwardly digest" such words of import as:—"It has been successful in moulding sanitary operations upon a scientific basis. It has been successful in checking some of the most fearful destroyers of human and animal life, such as typhoid fever, rabies, and anthrax. It has been successful in extending widely the radius of human knowledge. It has been successful, through a cognizance of their life history, in simplifying and rendering most effectual the labour of the cultivator in combating the diseases of useful plants. It has been successful in some countries in the establishment of experimental stations, of departments of agriculture with a scientific staff, and it is now creating a public opinion in favour of systematic and scientific treatment in opposition to the "old rule of thumb." This, from the pen of an authority, whose opinion was:—"When our County Councils awake to the necessity of diffusing through the country, especially amongst the rural population, scientific information on the diseases of animals and plants, and the best modes of enountering them, we may hope for further success. The signs of

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the times indicate a very close analogy between the diseases of animal and vegetable organisms. The inferences are strongly in favour of the hypothesis that many of the obscure diseases of plants have in microbes an efficient cause. The application of fungicides to infected plants is no longer regarded as a fanatical dream. Hence, it is a reasonable inference that the future of mycology is assured, and that the quarter of a century to come (this from 1892), if only as prolific as the quarter of a century which is past, will render obsolete the old query—'What good is it?'"*

* See Dr. Cooke's Address in *Transactions*, 1892, p. 360.

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Woolhope Naturalists' Field Club.

ANNUAL WINTER MEETING, MONDAY, DECEMBER 15TH, 1902.

The Annual Winter Meeting for the election of President and Officers for the ensuing year was held in the Woolhope Club Room on Monday, December 15th.

The following were present: The President (the Rev. Sir George Cornewall, Bart.), the Hon. and Very Rev. the Dean, Revs. H. M. Evill, E. J. Holloway, Preb. W. H. Lambert, H. B. D. Marshall, and M. G. Watkins, Dr. Scudamore Powell, Messrs. T. S. Aldis, H. C. Beddoe, C. P. Bird, J. Carless, R. Clarke, James Davies, E. J. Hatton, T. Llanwarne, J. Probert, H. Southall, Alfred Watkins, with Messrs. T. Hutchinson and H. Cecil Moore (honorary secretaries), and James B. Pilley (assistant secretary).

Mr. H. Southall, F.R. Met. Soc., of The Graig, Ross, was elected President for 1903.

The four Vice-Presidents elected were: Rev. Sir George Cornewall, Bart.: Rev. C. H. Binstead, of Breinton; Colonel J. A. Bradney, F.S.A., of Talycoed Court, Monmouth; and Dr. G W. Marshall, LL.D., F.S.A., of Sarnesfield Court, Weobley.

There was no change in the constitution of the Committee or other Officers of the Club.

Dr. Gerald Leighton, who has recently left the neighbourhood to undertake the editorship of "The Field Naturalists' Quarterly" in Edinburgh (Wm. Blackwood and Sons), was elected an honorary member of the Club. The names of four candidates for ordinary membership of the Club were proposed and seconded.

Books received during 1902 by purchase and by interchange with kindred Societies were placed upon the table, with a Catalogue of the same.

BOOKS RECEIVED DURING 1902.

British Mycological Society Transactions, 1900-1901, with plate and Index to Vol. I.

British Association for the Advancement of Science—Report, Glasgow, 1901.

British Museum (Natural History) Catalogue of British Hymenoptera, 2nd edition, 1891. Part I.

British Museum (Natural History) Guide to Shell and Starfish Galleries Department, Zoology, 1901.

British Rainfall for 1901.

Caradoc and Severn Valley Field Club Transactions. Vol. III., No. I., 1901, issued Feb., 1902.

Caradoc and Severn Valley Field Club—Record of Bare Facts for 1901, No. 11.

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Cardiff Naturalists' Society—Report and Transactions. Vol. 33, 1900—1901.

Cotteswold Naturalists' Field Club. Proceedings of, Vol. XIV. Part I. published Dec., 1901.

Field Naturalists' Quarterly for 1902. 4 parts.

Geological Society. Quarterly Journal. Vol. LVIII. Part 1, Feb. 18th, 1902. No. 229.

Geological Society. Quarterly Journal Vol. LVIII Part 2, May 15th. No. 230.

Geological Society. Quarterly Journal. Vol. LVIII. Part 3. Aug. 11th. No. 231.

Geological Society. Quarterly Journal. Vol. LVIII. Part 4. Nov. 29th. No. 232.

Geological Society. Geological Literature, added to the Library during the year ended Dec. 31st, 1901.

Geological Society. List of Members.

Geologists' Association. Proceedings of, Vol XVII. February, 1902. Part 6.

Marlborough College Natural History Society. Report of, No. 50 for the year ending Christmas, 1901.

Year Book of Learned Societies for 1902.

Yorkshire Naturalists' Union. Transactions. The Alga-Flora of Yorkshire. Part 27, being 4th instalment.

Yorkshire Naturalist, Reminiscences of a, Dr. W. C. Williamson.

North American Fauna—No. 22—from the U.S. Department of Agriculture. Washington, 1902.

Bulletin from Lloyd Library, Cincinnati, Ohio, per Smithsonian Institute, Washington, D.C. No. 1 for 1900; No. 2, 1901; No. 4, 1902. Mycological Notes by C. G. Lloyd, No. 5, 6, 7, 8, 9—86 to 181. Bulletin Mycological Series. Nos 1 and 2.

The Report of our Delegate to the British Association, Rev. J. O. Bevan, now residing at Chillenden Rectory, Dover, was read, as follows :—

"I have the honour as the Delegate of the Woolhope Naturalists' Field Club to hand in my Report of the Belfast Meeting of the British Association for the Advancement of Science. I am happy to say that it was highly successful, although the numbers attending were not so large as the authorities anticipated. The excursions were peculiarly interesting, both from a Geological and an Archæological point of view, comprising the basaltic formations of the Giant's Causeway, the galleries of New Grange, and the earliest Celtic crosses in Ireland at Monasterboice. The Harbour Works, too, at Belfast, were open to inspection, and Messrs. Harland, Wolff, and Co., welcomed us to their works, and to a sight of their giant ships and the processes relating to their construction.

"The Presidential Addresses were valuable for their outspoken references to General and Technical Education, *e.g.*, the General

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President's (Professor Dewar) and the Sectional Addresses of Professor Perry (Engineering Section) and of Professor Armstrong (Section of Educational Science). In a somewhat exaggerated form they furnished a scathing indictment of existing methods. The latter part of Professor Dewar's address was occupied with the history of liquefaction of gases, a subject in which the President himself has won great distinction.

"The work of the Physiological section was supplemented by various demonstrations in connection with an interesting collection of specimens, pathological and physiological. The skeleton of MacGrath, the "Irish Giant," was lent for our inspection by the curators of the Museum of Trinity College, Dublin.

"The Delegates of the Corresponding Societies had two full discussions, in the course of which the desirability was affirmed of: (1) Carrying out a pigmentation survey of the school children of Ireland; (2) Perfecting the archæological survey of Ireland; and (3) Dealing with the Act of Parliament which enables road authorities in England to enter upon tracts of country, such as Dartmoor, and denude them of stone circles, and monuments generally, for the purpose of collecting materials for the mending of roads.

"I have the honour of sending newspaper reports, journals, and miscellaneous literature relating to the meeting."

At the Committee meeting of the Club, held immediately previous to the General Meeting, the usual annual bills were presented and directed to be paid, and the estimate of Messrs. Jakeman and Carver for the Illustrations to the volume of *Transactions*, now in the press, was approved.

It was considered appropriate that the annual address of our President (Mr. Blashill) for the Jubilee year, which address was delivered at the Annual Spring Meeting on 3rd April, 1902, should be incorporated in the volume of *Transactions* of the Jubilee year, 1901-1902.

The article in the *Quarterly Review* on "Herefordshire," by the late Prebendary James Davies, of Moorcourt, President of the Woolhope Club in 1873, and again in 1874, is at the present time in the press, for reproduction in the *Transactions* by the special permission of the copyright holders, *e.g.*, Mr. John Murray and Mr. J. H. Davies, of Homelea, South Park, Lincoln, representative of the late Prebendary Davies.

A type-written copy of the earliest papers of the Club (dating from 1852 to 1865), collected from the local newspapers and other sources, was presented. The publication of these papers of the *Transactions* of the Club connected with its early origin was approved, with the expression of the desirability of incorporating the earliest printed six numbers, which were issued in pamphlet form. The first originally bound volume of the *Transactions* of the Club is dated 1866, and treats of the proceedings of the year 1866. It is a valuable and a rare volume, containing as it does, the first part of the Flora of Herefordshire, a map of the county divided into 14 botanical districts, and notes on

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the Geology of each separate district by the Rev. W. S. Symonds, F.G.S., etc., which latter was more recently revised and amplified in "A Flora of Herefordshire," which was issued in 1889.

ICHTHYOLOGY.

CRAYFISH IN A BROOK AFFLUENT INTO THE GARRON.

We are indebted to Mr. Wm. Blake for the record of the Crayfish (Astacus fluviatilis), a single specimen having been taken to him, which had been captured early in October by some labourers constructing a dam in a small brook at the North Gate, Ross; the small brook runs into the Garron, an affluent of the Wye.

ORNITHOLOGY.

The following records have been received from Mr. Wm. Blake, writing from 2, Acacia Villa, Ross:—

Under the date of 18th November, he reports that a Cormorant (Phalacrocorax carbo) was shot by Mr. Peachey on the Wye, near the osier bed on the upper side of Wilton Bridge, on 12th November.

The taxidermist who stuffed the bird reported that it contained thirty or forty leeches. The bird had most probably been blown inland by the gale of the previous Saturday, November 15th.

Under the date 16th December, Mr. Blake reports that two female Goosanders (Mergus merganser) were shot near the Weir-end, Ross, by Mr. Griffin, junior, of the Cleeve Farm.

Mr. Blake adds that he has now seen six female goosanders, and only one male specimen, which latter came down the Wye dead upon floating ice.

METEOROLOGY.

THE RAINFALL IN 1902.

The amount of rain has been a subject of general comment during the greater part of the year, and the general impression is that 1902 has been a wet year: this impression is to a great extent justified by a rather sunless summer with more than the average number of days upon which a little rain fell: observations prove that the aggregate rainfall during the year is really below the average.

We have received from the the Rev. P. J. McCann, observer at St. Michael's Cathedral Priory, Belmont, near Hereford, the following particulars:—

Rainfall at St Michael's		in 1902	23·64
Average	,,	,, in 10 years (1893-1902) ..	25·78
Maximum	,,	,, in 10 years was in 1900...	32·83
Minimum	,,	,, in 10 years was in 1893 ..	20·33

The Rainfall in 1902 was 2·14 inches below the average of the previous ten years.

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RAINFALL IN HEREFORDSHIRE IN 1902

Observations from 30 stations are annually recorded for compilation by H. Sowerby Wallis and Hugh Robert Mill, D.Sc, LL.D., in "British Rainfall."

The letter D denotes that a copy of the daily record has been received, and the correct total of the daily entries is given.

The letter M indicates that the gauge is read only on the first of each month.

An asterisk * denotes that the gauge was tested before erection, and a † that it has been visited and examined since.

§ Denotes that a series of levels has been taken from the gauge to an Ordnance bench mark.

T That the height is estimated or ascertained approximately from the same source.

B denotes that the altitude has been taken by the barometer.

Stations.	Authorities.	Rain Gauge. Diameter.	Rain Gauge. Height above Ground.	Rain Gauge. Height above Sea-level.	Depth of Rain. 1902.	Days on which '01 or more fell.
			ft. in.	Feet.	Inches	
D Ross (Croome Hall)	W. E. Hancock ..	8	4 0	288§	25·58	197
D† ,, (The Graig)	H. Southall	5	1 0	213§	23·79	185
,, (Perrystone Court) ...	Mrs. G. Clive	5	1 3	—	25·03	176
Upton Bishop (The Baches) ..	W. Hogarth ...	5	1 0	300	22·40	130
Much Dewchurch (Brynwyn)...	Sir J. Rankin, Bart., M.P. ...	5	0 9	416T	26·09	140
D Much Marcle (Caerswall) ...	J. A. H. Charles ..	5	1 0	423B	25·69	188
D ,, ,, (The Mount)...	T. Charles ..	5	0 8	240T	23·78	171
D Fownhope (Morney Cross) ..	O. E. Cresswell ...	5	1 5	—	22·49	143
D Woolhope (Wessington Court)	Miss L. Grafton . .	5	1 0	440	23·25	177
D†Ledbury (Orchardleigh) ...	M. A. Wood ...	5	3 0	180	24·28	172
D ,, (Underdown)	S. H. Bickham ...	5	1 0	307§	24·12	173
,, (do.) M	do. ..	5	1 0	306§	23·86	—
,, (Putley Court) ...	J. Riley	5	1 0	290	26·51	177
Hereford (Broomy Hill) ...	N. H. Matthews ..	—	—	217§	22·66	175
D ,, (Breinton Court)...	H. A. Wadworth...	5	1 0	238T	23·84	160
,, (St. Owen Street)...	Mrs. Jay Jones ..	5	6 0	190T	24·22	—
D ,, (St. Michael's Priory)	Revs. B. Mawson and J. McCann..	8	1 0	291	23·64	144
D Lugwardine (The Laurels)...	C. J. Johnstone ...	5	1 0	270T	21·24	156
Yarkhill Vicarage	Rev. A. G. Jones .	8	1 0	190	22·98	165
D Canon Frome Vicarage ...	Rev. M. Hopton...	8	1 3	252T	22·90	177
Credenhill	R. M. Whiting ...	5	1 0	280T	24·74	158
D†Malvern Hills (Upper Wych)	Baldwin Latham, C.E.	5	1 0	1006§	24·95	134
D Hereford (Burghill Court)...	Miss E. D. Woodhouse	5	0 10	293T	24·27	180
D Hope-u-Dinmore (Hampton Court)	J. H. Arkwright	8	1 2	212B	31·91	166
D Pembridge (Dilwyn)	T. L. Hall	5	0 8	290T	26·42	169
D Kington (Lynhales)	S. Robinson... ..	8	1 0	566	27·77	210
D ,, (Gravel Hill) ...	Col. G. F. Pearson..	5	0 8	540T	30·97	219
D Pembridge (Marston) ...	H. Langston ...	5	1 5	347§	26·33	161
D Bromyard (Buckenhill)	R. Phipps	8	1 9	—	25·23	168
D Leominster (Farm)	Miss Southall ...	5	1 6	268	23·95	181

The average rainfall in Herefordshire (from the above 30 observing stations) was 24·849 inches in 1902.

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In *The Times* of 10th January, 1903, a letter signed by H. Sowerby Wallis and Hugh Robert Mill, dated 62, Camden Square, London, N.W., January 9th, contained a Table giving the total amount of Rainfall in 1902, at 52 stations, distributed as uniformly as conveniently may be over the three Kingdoms, and, in the last column, the difference from the average of the 30 years, 187c—1899.

The first 18 pages of the present volume of *Transactions* contain the elaborately prepared Tables of Mr. H. Southall of Rainfall in Herefordshire. As it is considered that it would be interesting to our local Meteorologists to make comparisons with other counties the Table referred to is reproduced.

TABLE I.

THE RAINFALL OF 1902 COMPARED WITH THE AVERAGE OF THE 30 YEARS 1870 TO 1899.

County.	Station.	Rainfall in 1902.	Difference from the average of 30 years.
ENGLAND.			
London ...	Camden Square	20·84	— 4·32
Kent	Tenterden	21·59	— 6·77
Sussex	Eastbourne	23·48	— 7·50
Hants	Ashdell, Alton	26·43	— 6·77
Bucks	Addington, near Buckingham ..	18·07	— 8·68
Suffolk	Westley, Bury St. Edmunds ...	21·71	— 3·68
Wilts	Mildenhall, Marlborough ...	25·74	— 4·45
Devon	Druid, Ashburton	43·76	— 9·16
„	Lee Abbey, Lynton	30·39	— 6·91
„	Polapit Tamar, Launceston ...	34·92	— 3·93
Cornwall	Trevarna, St. Austell	42·61	— 4·55
Somerset ...	Bincombe, Crewkerne	31·55	— 4·13
Hereford ...	The Graig, Ross ...	23·79	— 5·72
Salop	Woolstaston, Church Stretton ...	30·51	— 2·53
Leicester ...	Thornton Res., Leicester ...	21·37	— 5·11
Lincoln ...	Boston	21·80	— 1·50
Derby	Chatsworth	29·57	— 5·65
Cheshire ..	Hinderton, Neston	27·32	— 1·35
Lancashire ...	Southport	25·42	— 7·80
York, W.R. ..	Grimwith, Pateley Bridge ...	31·27	—14·34
„ „ ...	Thorn's Hall, Sedbergh ...	37·44	—15·06
„ E.R. ...	Pearson Park, Hull	21·61	— 5·41
Durham ...	Wolsingham	26 27	— 8·48
Cumberland ...	Seathwaite, near Keswick ...	96·71	—36·03

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TABLE I.—*Continued.*

THE RAINFALL OF 1902 COMPARED WITH THE AVERAGE OF THE 30 YEARS 1870 TO 1899.

County.	Station.	Rainfall in 1902.	Difference from the average of 30 years.
WALES.			
Pembroke ...	Castle Malgwyn	38·40	— 5·45
Cardigan ...	Gogerrdan, Aberystwith ...	35·85	— 9·56
Carnarvon ...	Talarvor, Criccieth	31·65	— 4·18
„ ...	Llandudno	25·00	— 5.98
SCOTLAND.			
Wigton... ...	Ardwell, Stonykirk	36·08	+ 1 03
Kirkcudbright...	Cargen, Dumfries	37·21	— 6·22
Selkirk... ...	Galashiels	24·29	— 9·53
Renfrew ...	Stanely, Paisley...	30·30	—12·15
Argyll	Eallabus, Islay	43·75	— 3·93
Kinross ...	Loch Leven Sluice	27·55	— 8·65
Perth	Stronvar, Lochearnhead ..	61·25	—13 45
Kincardine ...	The Burn, Fettercairn	33·55	— 1·20
Aberdeen ...	Braemar, near Balmoral ...	31·84	— 4·23
Banff	Keith	33·95	+ 1·23
Ross	Ardross Castle, Alness	33·74	— 4·10
Caithness ...	Watten	21·42	— 5·98
IRELAND.			
Kerry	Derreen, Kenmare	69·88	+ ·38
Clare	Miltown Malbay	32·26	—12·24
Wexford ...	Longraigue, New Ross... ..	39·36	— 1·18
Carlow... ...	Browne's Hill, Carlow	34·50	+ ·06
Westmeath ...	Belvedere, Mullingar	30·68	— 5·82
Galway... ...	Ballinasloe	30·27	— 6 77
„	Kylemore, Clifden	61·73	—18·47
Mayo	Enniscoe, Crossmolina	46·27	— 4·23
Sligo	Markree, Collooney	38·84	— 2·99
Down	Warrenpoint	37·99	— ·71
Antrim... ...	Queen's College, Belfast ...	30·41	— 2·82
Donegal ...	Convoy, Raphoe	40·83	— 3·84

From the above Table it will be observed that there are only four counties, namely, two in Scotland and two in Ireland, in which the rainfall of 1902 was not below the average of 30 years.

Turning to Scotland, Ardwell House, Wigtonshire, is in the extreme south-west; and Keith in Banffshire is in the north-east. The excess is trifling in each case.

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In Ireland again the excess is still more trivial in amount. Kenmare, in County Kerry, is in the south-west, and Carlow is in the south-east.

In England a glance will show how much the rainfall upon the Western exceeds that upon the midland and eastern counties It is not, however, fair to take the rainfall at Seathwaite as representative of the whole county of Cumberland. In the neighbourhood of Carlisle the average rainfall is only. about 30 inches. Seathwaite, where the average of 30 years rainfall is 132·74 inches, is inserted in illustration of the typical rainfall of the Lake District, and refers to only a small area of Cumberland.

The following deductions are made from the above Table.

England	... 24	stations ;	rainfall of 1902,	82 per cent. of average.
Wales ...	... 4	,,	,,	85 ,,
Scotland	.. 12	,,	,,	87 ,,
Ireland	... 12	,,	,,	90 ,,
United Kingdom	52	,,	,,	85 per cent. of the average.

We have thus the rainfall of 1902, for the British Isles as a whole, 15 per cent. below the average.

This deficiency following a long period of more or less dry years is illustrated in the following Table, given in the same letter, showing approximately the relation to the average of the rainfall of each year from 1880 to 1901.

Table II.

Mean Rainfall for Each Year from 1880 at about 100 Stations Distributed over England and Wales. Expressed as a Percentage of the Average.

Year.	Per-centage.	Variation.	Year.	Per-centage.	Variation.
1880 ...	110	+ 10	1892 ..	90	— 10
1881	106	+ 6	1893	81	— 19
1882 ..	124	+ 24	1894 ...	106	+ 6
1883 ...	108	+ 8	1895 ...	92	— 3
1884 .	86	— 14	1896 ..	91	— 9
1885 ...	98	— 2	1897 ...	100	— 0
1886 ..	110	+ 10	1898 ..	86	— 14
1887 ..	69	— 31	1899 ...	92	— 8
1888 ..	92	— 8	1900 ..	106	+ 6
1889 .	91	— 9	1901 ..	87	— 13
1890 ..	88	— 12	1902 ...	82	— 18
1891 ..	110	+ 10			

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The table shows that of the 18 years 1884 to 1901 only four had more than the normal rainfall, and that during those 18 years there had been an average deficiency of 7 per cent., or a total deficiency of one-and-a-quarter year's rainfall in the 18 years. Following on this, a year with only four-fifths of the average rain is undoubtedly very serious.

In the foregoing calculation 1902 is not included, inasmuch as the number of stations on which the value is based is only about half that used for the other years; but, accepting the provisional value as trustworthy, we find that in the last ten years only nine-and-a-quarter years' rain has fallen over England and Wales, while in the last 16 years the rainfall has equalled only that due to 14⅜ years.

TABLE III.

MEAN RAINFALL FOR EACH YEAR FROM 1893 AT ABOUT 100 STATIONS DISTRIBUTED OVER ENGLAND AND WALES. DIVIDED INTO GROUPS FOR THE SOUTH, EAST, AND WEST. EXPRESSED AS A VARIATION FROM THE AVERAGE.

Year.	England, South.	England, East.	England, West, and Wales.
	Per Cent.	Per Cent.	Per Cent.
1893	— 13·4	— 21·8	— 17·9
1894	+ 21·2	— 1·3	+ 2·9
1895	— 3·6	— 5·9	— 11·1
1896	— 8·6	— 5·8	— 11·7
1897	+ 4·2	— 9·4	+ 1·6
1898	— 17·6	— 19·4	— 11·8
1899	— 9·9	— 10·6	— 6·1
1900	+ 4·2	+ 4·0	+ 8·6
1901	— 14·9	— 14·8	— 11·5
1902	— 16·8	— 21·4	— 15 7
Mean ...	... 5·5	— 10·6	— 7·2

In Table III. the stations have been grouped according to their geographical position in England South, England East, and England West, including Wales, with a view to illustrating the incidence of the drought in different parts of the country during the last ten years. It shows that while in England South and West there have been three years out of the ten with more than the average rainfall, in the east there has only been one such year, while the average deficiencies for the ten years are:—England East, 10·6 per cent. (or rather more than one year's fall); England West, 7·2 per cent. (nearly three-quarters of a year's rain); England South, 5.5 per cent. (rather more than half a year's rain).

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TEMPERATURE.

As regards Temperature, May was wintry and very cold, achieving the record coldest May for sixty years, i.e., since 1841, on the authority of the "Daily Graphic," May 22nd, 1902, and colder than April.

The warmest May on record (on the same authority) for the past sixty years occurred in 1893, when the mean temperature for the whole month was 58·5 degrees.

There was also a record cold in the month of July. The following extract is from the "Daily Graphic" of 24th July, 1902.

Record Cold for July.

The highest temperature at Greenwich Observatory for the three consecutive days, Sunday to Tuesday, was 58 deg. 6 min., and the maximum readings were respectively 58 deg., 58 deg. 6 min., and 58 deg. 4 min. There is no previous record at Greenwich with the shade temperature below 60 deg. for three consecutive days in July during the last sixty years, and there is only one instance of two consecutive days with so low a reading, and that was July 11th and 12th, 1888, when the highest readings were respectively 53 deg. 9 min. and 54 deg. 9 min. These are the lowest day temperatures for the month in the last sixty years, and the only other years with the midday temperature below 57 deg. are 1856 and 1890. The lowest night temperature which has occurred in July is 38 deg. 7 min. on the 19th in 1863, and there have in all been only three years during the last sixty with a night reading below 40 deg. As yet this month the lowest shade reading at Greenwich is 42 deg. 4 min. on the 12th, while on the same night the exposed thermometer indicated a frost, the reading on the grass being 30 deg., 8 min. There was a considerable increase of temperature yesterday, and in London the sheltered thermometer rose to 67 deg. which, however, is 7 deg. below the average.

OBSERVATIONS ON BRITISH WEATHER IN 1902.

The following is from the "Daily Graphic" of 26th February, 1902.

British Weather in 1902.

A summary of the weather for the several districts of the British Islands for the year 1902, and a comparison with the means for the last thirty-seven years, has just been issued by the Meteorological Office. The temperature last year was below the average over the entire kingdom, the deficiency from the average for the British Islands as a whole being 0·5 deg. The greatest deficiency was 1·3 deg. in the East of

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Scotland, and the least 0·1 deg. in the South of Ireland The highest mean temperature for the year was 52·1 deg. in the Channel Islands, and the lowest was 45·1 deg. in the North of Scotland, which is just 7 deg. colder than the Channel Islands. The mean temperature of the British Islands for the last thirty-seven years is 48·5 deg., the mean in the eastern or principal wheat-producing districts being 48·0 deg., and the mean in the western, or principal grazing districts, being 48·9 deg. The mean for the South of England is 49·6 deg. The rainfall was deficient except in parts of Scotland, and the deficiency for the whole of the British Islands was 3·1 in. The greatest deficiency was 8·7 in. in the North-west of England, and 7·8. in in the South-west of England. The largest aggregate rainfall in 1902 was 53·0 in. in the West of Scotland, and the least 21 7 in. in the East of England. The greatest average rainfall for the last thirty-seven years is 46·7 in. in the North of Scotland, and the least is 25·0 in. in the East of England. The average rainfall for the whole Kingdom is 34·3 in. Taking the British Islands as a whole, the coldest year of the series was 1879, with a mean temperature of 46·2 deg., the warmest 1868, with the mean 50·4 deg. The least rainy year had 25·8 in. in 1887, and the year with the most rain 49·1 in. in 1872.

Rainfall records are important in their relation to the health, industries of the community, and agricultural produce of the country.

We hope that some one or other of the meteorological observers in Herefordshire will pursue the subject of tabulating their records annually in the volume of our *Transactions*.

A Table appeared in "The Times" of January 2nd, 1903. It is reproduced and suggested as a sample Table.

THE WEATHER OF 1902.

TO THE EDITOR OF "THE TIMES."

SIR,—I have the pleasure to enclose the summary of extracts of our meteorological observations for 1902, and hope it may be useful and interesting for comparison with those of the last 30 years which you have published.

I am, Sir, your obedient servant,

BRYANT SOWERBY, Secretary.

Royal Botanic Society of London Gardens, Regent's Park, N.W.,
January 1st.

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The Weather of 1902.

Observations at the Royal Botanic Society of London Gardens, Regent's Park, N.W.

Month	Means at 9 a.m.			Extreme Temperatures.						Rain.		Sunshine (bright)		No. of Days Sunshine.
	Barometer reduced to sea level.	Thermometer.		Shade.				Max. Sun.	Min. Grass.	Total Depth	No. of Days.			
		Dry Bulb.	Wet Bulb.	Maximum.		Minimum.								
	In.	Deg.	Deg.	Deg.	Date.	Deg.	Date.	Deg.	Deg.	In.		H.	M.	
Jan. ...	30·15	40·2	38 3	52·5	10th	24·0	14th	71·2	18·0	0·76	10	31	15	16
Feb. ...	29·90	34·4	33·0	51·8	28th	20·0	15th & 20th	79·0	9·0	1·15	11	33	50	14
Mar. ...	29·87	43·6	41·4	60·0	31st	30·0	6th	102·5	24·0	1·92	13	54	06	20
April ...	29·94	48·0	43·6	67·1	19th	30·0	6th	110·0	21·0	0·43	8	98	21	25
May ...	29·98	50·7	46·1	70·0	27th	32·2	13th	122·0	24·0	2·43	24	149	42	27
June ...	29·95	60·1	54·8	81·2	29th	39·2	9th	124·0	31·0	3·13	15	146	33	24
July ...	30·04	62·4	57·0	84·5	15th	44·5	11th	124·0	37·2	1·17	11	183	09	26
Aug. ...	29·94	60·9	57·1	77·0	29th	44·0	10th	124·0	41·0	3·22	18	105	45	29
Sept. ...	30 07	56·5	53·2	73·0	22nd	40·0	18th	116·5	34·0	0·86	9	128	06	29
Oct. ...	29·97	49·9	47·2	63·5	10th	35·0	18th	98·0	29·0	1·46	17	39	31	18
Nov. ...	29·90	44·8	43·4	58·5	6 & 7th	29·0	20th	84·0	24 0	1·74	11	25	33	13
Dec. ...	30·05	41·4	38·9	56·0	17th	25·0	4th	71·0	20·0	1·48	12	21	14	10
Totals...	—	—	—	—	—	—	—	—	—	19·75	159	1,017	05	251
Means ..	29·98	49·4	46·1	—	—	—	—	—	—	—	—	—		—
Highest	—	—	—	84·5	July	—	—	124·0	—	—	—	—		—
Lowest	—	—	—	—	—	20·0	Feb.	—	9·0	—	—	—		—

THE CORNISH DUST FALL OF JANUARY, 1902.

Under the title of "Red Rain in Cornwall" we have seen observations referring to what Dr. H. R. Mill terms a "Dust Fall," and concerning which he read a paper at a meeting of the Royal Meteorological Society on 21st May, 1902.

The West of England newspapers of 24th January, 1902, announced falls of "pink snow" and "muddy rain" in several parts of Cornwall and South Wales.

Upon investigation Dr. Mill found the phenomenon reported from seventy-five different places in England and Wales, all South of a line joining Milford Haven and Chepstow, and west of the meridian of Bath.

Four separate areas included in the visitation under dates between 21st and 23rd January were :—

(1) Cornwall, 1,400 square miles ; (2) North Devon, 150 square miles; (3) Milford Haven, 50 square miles; and (4) Bristol Channel,

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600 square miles. The 22nd was undoubtedly the day when most falls occurred, and the observations show that the colour of the dust was yellowish or brownish.

None was reported to have fallen upon the high ground of the Mendip Hills, Dartmoor, Exmoor, or the Welsh Mountains; but curiously enough, the observations were confined mostly to the fall of the dust upon low ground.

Dr. Mill, from the consideration of all meteorological conditions at the time and for several days before, is inclined to believe that the evidence points to the transportation of the dust from the deserts of Africa.

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Woolhope Naturalists' Field Club.

EARLY ANNUAL MEETING, TUESDAY, MARCH 31ST, 1903.

The Annual Meeting was held on Tuesday, 31st March. The retiring President (the Rev. Sir George Cornewall, Bart.) occupied the chair, and Mr. H. Southall (President elect for the current year) was vice-chairman. There were also present the Revs. H. M. Evill, H. E. Grindley, Dr. Harris, A W Horton, A. Ley, H. B. D. Marshall, W. E. T. Morgan, K. O'Neil, M. G. Watkins, and H. T. Williamson, Drs. Fitzsimons and H. Jones, Messrs. H. C. Beddoe, S. H. Bickham, J. P. Brown, J. Carless, R. Clarke, James Davies, E. J. Hatton, Herbert E. Jones, W. G. Lloyd, N. H. Matthews, J. Probert, E. Stooke, with T. Hutchinson and H. Cecil Moore (honorary secretaries) and James B. Pilley (assistant secretary).

The HON. TREASURER (Mr. H. C. Beddoe) presented the financial statement, which showed receipts amounting to £119 6s. 9d., and a balance in hand of £155 16s. 4d.

Mr. MOORE stated that it was the first time that they had such a large balance in hand; it was, however, all required to pay the printers' and bookbinders' bill for the volume of *Transactions* 1900, 1901, to April, 1902, which was practically ready for the bookbinders, and would be issued early to each Member who had paid his annual subscription for the current year 1903, thus adhering to the time honoured regulation of payment in advance.

Mr. PILLEY read the annual report:—

That a re-action should take place after the Jubilee year of the Club in 1901, when a record under every heading occurred, is only what may have been expected. The result during the past year was a decrease under each heading except the number of Members, the books showing an increase of one, 241 against 240 in the previous year. The receipts amounted to £119, compared with £131 in 1901, a decrease of £12, but it was a little in excess of the income for 1900. The arrears, which were only £3 10s. in the previous year increased to £8 10s.; the former amount was the lowest yet recorded.

Ten Members were added to the list during the year, and the loss by death and resignation was nine.

The obituary list contains the name of Sir Herbert Croft, who was elected a Member in 1886, and who filled the Presidential chair in 1890. He contributed the following papers to the *Transactions*:—"Sir

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Richard Croft and Prince Edward of Lancaster," in 1893; "The Battle of Tewkesbury," in 1893; and "Prince Edward's Escape from Hereford," in 1900. The Rev. Preb. W. Poole, whose name also appeared on the obituary list, was one of the oldest Members, having been elected in 1863. He does not appear to have contributed any papers.

The following resigned: Revs. T. M. Beavan, T. Emmott, W. M. D. la Touche, R. Wood, Colonel E. W. Cradock, and Mr. H. D. Vansittart. All had been comparatively but a short time Members, with the exception of the Rev. T. M. Beavan, who was elected in 1867.

The attendance at the Field Meetings was considerably smaller than the average of recent years, only amounting to 174, distributed as follows:—The Woolhope Valley Meeting, 50; Mitcheldean, 19; Eastnor Castle (Ladies' Day), 59; and Bredon, 46. The weather, which is very rarely unfavourable on the Field Meetings, was very much so at the Mitcheldean Meeting, rain falling heavily in the morning. The number attending was the smallest for many years, and about one-third the average for the second meeting of the season.

The following outings were afterwards arranged for the forthcoming season:—Shucknall, May 28th; Crickhowell, June 11th; Church Stretton (ladies' day), July 23rd; Caerwent, August 20th.

Mr. HUTCHINSON said that in reference to the Wild Birds' Protection Act, he moved a resolution at the last annual meeting which was forwarded to Sir James Rankin, M.P, who brought it before the County Council. That body, he was sorry to say, rejected it, he believed he was right in saying without much consideration. The only reason he had heard assigned for the rejection of the resolution was that the magistrates would have to convict boys for taking birds' eggs. Now the Wild Birds' Protection Acts were passed for the purpose of preserving wild birds and their eggs, and one would have thought that the County Council, instead of raising difficulties as to magistrates carrying out their duties, would have facilitated their work, and given them every encouragement in their power. He thought the County Council hardly realised what were the objects of the Club in sending the resolution to them. The Club had no animosity whatever against collectors; they did not want to prevent the honest *bonâ fide* collector and the scientist carrying out their hobbies; but what they did object to was the indiscriminate and wholesale destruction of wild birds and their eggs. In the adjoining counties the Acts were in force, and therefore Herefordshire, not having adopted such provisions, became the sanctuary of bird catchers, etc., just over the borders where they could not carry on their operations. He proposed "That the Woolhope Club, having had under its consideration the importance of applying for an Order under the Wild Birds' Protection Acts, begs to suggest to the County Council a small committee with power to add to their number, to carry out this object."

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Mr. SOUTHALL, in seconding, stated that the matter came before the Council on the last occasion in too vague a manner. He thought they ought to say clearly the grounds on which they made the application, and name the birds they especially wished to protect.

The resolution, which was supported by the PRESIDENT and Mr. PILLEY, was carried *nem. con.*

Mr. SOUTHALL, in reference to the protection of wild plants, said that very few plants had become extinct within the last 50 years, but certain ferns had been grubbed up for sale, and he did not suppose that one in 500 grew afterwards. In the neighbourhood of Symonds Yat some varieties of ferns which were formerly plentiful, had now become almost extinct. He did not know what they could do, as no law appeared to apply to the matter. He thought they had better postpone the subject until some future time.

Dr. HARRIS said that one source of the danger to wild plants and flowers was to be found in the "Nature study" classes in elementary schools. "Nature study" with some teachers and children at present appeared to consist of tearing the plants from the hedge rows and leaving them to be trampled on in the road.

The Rev. A. LEY endorsed the remarks of the previous speaker. Unless "Nature study" by children was carried out under the most rigorous supervision, the extermination of many rare plants would inevitably follow.

Mr. JAMES DAVIES asked if Mr. Southall could bring the matter before the Selborne Society.

It was resolved upon the proposition of Mr. SOUTHALL that the best means of protection should be first considered by a few experts of the Club in association with neighbouring Clubs, and the results of mature consideration be brought before the Members on a later occasion.

PRESIDENTIAL ADDRESS.

BY REV. SIR GEORGE CORNEWALL, BART.

In accepting the post of President of your Club for the year 1902, I could not but regret that the office had not fallen into younger hands, as I fear that I must give up my claim to be an active member of the Club, but the pleasure which I experienced in acting as your President in the year 1891 emboldened me again to fall in with your kind wish that I should take this burden upon me, and I am thankful to say that I was able to be present at a majority of the meetings held in the past year.

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In a Club of this kind one cannot help passing in review both the work it has done, the progress which it has made, and the manner in which it has fulfilled the objects for which it was instituted, and as an old member I might have been able to furnish you with some recollections of the past, but in such a review I have been forestalled in a great measure by our President of last year, our Jubilee year,* Mr. Blashill. He has, in his address, given us a most interesting, and, may I not add, valuable account of the work done by the Club in its early days. He has told us how the foundation was laid of that valuable series of records, which has placed in our hands a fund of information on all that can be gathered of interest in our county to the Geologist, the Zoologist, the Botanist, and the Archæologist. These volumes of the *Transactions* will form an excellent supplement to our County History as to the completion of which we have hopes that it may be successfully carried through.

The tendency of our age is to drive our populations into the towns. The enormous growth of our commercial centres constitutes a real danger. The enforced dweller in the country is commiserated; the country is so dull, it is said: but to the student of Natural Science there are opened on every hand fresh sources of delight and interest. For while to the lover of the picturesque a range of mountains forms only part of a beautiful landscape, the geologist can detect at a glance their probable formation and cause of elevation, and while by no means coldly observant of the scene of beauty on which he is gazing, can call up in his mind's eye the history of former ages, and build up in thought the various processes whereby it has been perfected at the hands of the great Master Worker; the botanist or the zoologist develops a keenness of observation which enables him to detect the various minute variations in plants or living things, which to the ordinary observer are unknown, and therefore their beauty unfelt.

The archæologist, while studying those relics of the past of which our county possesses a full share, is able to call back in thought a remote age. In the castle he can picture to himself the life and manners of the feudal period. In the abbey he finds evidence of the power and valuable work done in a rude age by those who chose the contemplative life. There is a history in the sculptured stone as clear as in the ancient record, and in carrying out such labours is able to save from the despoilers the landmarks in the nation's history, which, if destroyed, cannot be replaced.

The studies which this Society desires to promote tend to strengthen our interest in those surroundings among which our lot in life is cast, and will repay the labour they entail. Such remarks must not be so interpreted as to imply that our Society is unable to show in its list of members a willingness to share in the advantages which such member-

* See *Transactions*, 1900—1, to April, 1902, p. 288.

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ship may be supposed to confer, and that our Members are reduced, or that new records of work have ceased to have gathered. Such is by no means the case; indeed, the difficulties which our Honorary Secretary has to meet are greatly increased by the numbers who are anxious to take part in our Field Meetings. The Club, from this point of view, is in a very flourishing condition. We, who are older Members, must be content to see and welcome new faces among us; yet we cannot but deplore that many who were familiar faces among us have passed to their rest. We call to mind that such losses of valuable Members have been felt during the past year.

We recall a former President—Sir Herbert Croft—who desired as long as he was able to take part in our meetings. He was with us at the meeting at Ross, determined to join us though far from well. He planned the meeting at Berkeley Castle, and the historical contributions which he made to the records of the Club will always be of interest. In whatever useful work could be done in this county he was eager to take a share. I have lost in him a true and cordial friend. The same may be said of another Member taken from us during the past year—the Rev. W. Poole. His life's work was devoted to promote all that tended to the best interests of this county, and if he took no leading part in scientific pursuits, of his undoubted ability and of his unwearied devotion to the work which he undertook there can be no question. Nor can I pass over the name of the Rev. Joseph Barker, of Eardisland, in the list of active Members of the Club. He contributed various papers to our *Transactions*, throwing light on parts of history relating to this county. In this respect, while we mourn the loss of a valued Member, his memory is enshrined in the work which he has done for us, and the share which he has taken in promoting the prosperity of a Society to which he was much attached. Let us hope that the spirit of historical research which was strong both in Sir H. Croft and Mr. Barker will not be lost, and that we shall not lack workers in the same field in the future as in the past—a mine of interest by no means worked out. The age in which we live is remarkable, as well pointed out by our late President, for the very important discoveries which have been made in our time. In every branch of science we remark an activity of research unexampled. Whether it be in the illimitable vault of the heavens to discover by improved instruments clusters of stars hitherto unobserved; whether it be to explore the depths of ocean for new forms of life; whether it be to discover new elements; to imprison subtle gases in a liquid form; new modes of manufacture; new forms of locomotion; the busy brain of man is ever active. The discovery of Marconi may work a revolution in the conveyance of intelligence of which at present we possess but the germ. Yet, at the same time, (while fully honouring the work of those who have given their life's labour in pursuit of so noble a cause as the unfolding as far as we may nature's laws), it cannot but be remarked that we search in vain for the origin of those forces whose effects are so

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laboriously studied. What is light? What is heat? What is electricity? What is matter? What is life? These are questions to which an answer is as yet beyond our ken. Those sequences of cause and effect which establish the claim of a law to be invariable, as we trace them backward, reach a point when further explanation becomes impossible. The machine is before us, working accurately in all its parts, and we can examine its mechanism, but we cannot reach the motive power. The law of gravitation has been of the utmost value in all astronomical calculations. It is expressed by a mathematical formula. Why the particular ratio in which it is expressed should be chosen more than any other we know not. It would seem that the intellect of mankind is encouraged to explore the hidden mysteries of all created things, but when he seeks to explore the infinite he is baffled.

I fear that the tendency of the present age is to promote an antagonism between the revelation which we possess of the infinite and scientific pursuit. The discoveries of Darwin, (whom we must all value as a delightful personality, and an able, accurate, and indefatigable observer of nature), are supposed to revolutionise our ideas regarding the history of the past. That this need not be the case is shown in the lectures of the late Archbishop Temple, who, while recognising evolution as a great fact which cannot be set aside, proceeds, "It seems in itself more majestic, something more befitting Him to Whom one thousand years are as one day, and one day as one thousand years, to impress His will once for all on His Creation, and to provide for all its countless variety by this one original impress than by special acts of creation to be perpetually modifying that which He had previously made." And again, "What conception of foresight and purpose can rise above that which imagines all history gathered as it were into one original creative act from which the infinite variety of the universe has come and more is coming yet?"

It seems strange that one like Darwin, who loved to bring to light all the secrets of created life should have had such unworthy ideas on the subject of beauty. He was satisfied with the utilitarian idea that the beauty of flowers was designed to attract insects. All true lovers of flowers must echo, I feel sure, Dr. Temple's words when he says:— "The beauty of flowers is far more than mere conspicuousness of colour, even though that is the main ingredient. Why should the wonderful grace and delicacy and harmony of tints be added? Is this all mere chance? Is all this superfluity pervading the whole world and perpetually supplying to the highest of living creatures, and that, too, in a real proportion to his superiority, the most refined and elevating of pleasures, an accident without any purpose at all?" For we observe that this beauty does not consist wholly in the individual flowers, but in the grouping of flowers, in their foliage; and, taking a wider range, the grouping of trees, and mountain, and river, forming what we call landscape, is incomplete unless we add the beauty of cloudland. Is this

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chance? "If evolution has produced the world such as we see it, and all its endless beauty, it has bestowed on our own dwelling place, in lavish profusion and in marvellous perfection, that on which men spend their substance without stint, that which they value above all but downright necessities."

The subject is too vast to be dwelt upon in a few sentences. I have touched upon it because it seems to me that scientific research is as nothing if it does not lead up to those higher thoughts and speculations, which concern man so nearly, and of which it is but the threshold. You will no doubt be of opinion then that it is rather the duty of your President to remark on the fortunes of the Club during his year of office. Before I speak of our field meetings, I may recall to your recollection an excellent paper on * "Rainfall in Herefordshire during the 19th Century," by our incoming President (Mr. Southall)—a kind of testimonial may I say, of the fitness of the choice we have made in endeavouring to secure him to occupy that post.

He has told us that periods of dry and wet weather during 1800 succeeded each other every 20 years: speaking generally, that we are now in the middle of a period of dry weather, which has lasted for 13 years, that we are not to despair of a change when this cycle draws to its close. Meanwhile it may be permitted to me to make a few remarks on the inconvenience and losses which a cycle of dry seasons entails. We have in our *Transactions* accounts of four great floods in the Wye; February, 1795, 20 feet; February, 1852, 18 feet 4 inches; December, 1868, 16 feet; and May, 1886, height not stated. It has not been unknown in the past that the flood water has penetrated into four churches in the neighbourhood of Moccas, viz., Monnington-on-Wye, Preston-on-Wye, Willersley, and Letton. Such an event has been unknown of late years. It was not uncommon for the river to overflow its banks during the summer months, leaving a deposit of sand in the mowing grass, causing considerable loss to the farmers. At the present time we may have one considerable flood in the course of the winter, and that is all. The river remains high for a shorter period than formerly, and the damage wrought by the flood is but light.

No doubt frequent and wide-spreading inundations are not altogether desirable. There is danger to the bridges, and risk to the stock pasturing on the banks, and yet there are serious evils which must be put down to the droughts which we have lately experienced, evils to which it is difficult to find a remedy. The alluvial meadows bordering the river have always been considered as among the most valuable agricultural land in the country. Grass fed bullocks of our massive Hereford breed were reckoned to be the primest beef in the market. There is no doubt that the value of these Wyeside meadows has of late greatly deteriorated. The rich and succulent pasturage provided mainly by the luxuriant

* Since published as the opening chapters of this current volume of *Transactions*

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growth on these meadows of the Cock's Foot grass (*Dactylis glomerata*) is no longer of the same feeding quality. Numbers of these meadows have to be stimulated by bones, basic slag, or other artificial manures. It was the frequent floods, we may be sure, which fertilised these meadows. Nature in the old days provided a deposit which satisfied all the needs of the soil. No trouble was caused to the farmer. The owner was satisfied that here at least was a kind of property which for its development required no expensive outlay, and of which the return was year by year secure. This meadow land was not uncommonly valued at £3 an acre. It is a question whether any of them now can be reckoned to reach anything like that figure. It may also be said, I think, that this alluvial soil is peculiarly susceptible to the influences of heat and drought; fertile, if moist, but drying into a hard ungenial soil if the hot dry weather be prolonged.

We may also observe changes in the vegetation which flourishes on the river bank. Plants which prefer to grow in still waters do not readily make a home in water disturbed by violent floods. I find in recent years plants new to me on the banks of the Wye in my neighbourhood.

I feel sure that the Flowering Rush, *Butomus umbellatus*, is a recent importation, common, I believe, in the more sluggish waters of the Lugg, but certainly not to be seen here some years back. I find this year a large bunch of the common Bullrush, *Typha latifolia*, which has lately established itself; the Bur-reed *Sparganium ramosum*, is extremely luxuriant, and forms quite a feature in this riverside vegetation. The banks of the Water Crowfoot, *Ranunculus aquatilis*, are extending year by year, and interfere with the fishing. There is no doubt that in suitable places Water Lilies would flourish.

It is an important question what is to be the future of the Wye as a fertilising river—a Herefordshire Nile—pouring a flood of wealth into a county already richly endowed with the various bounties of Nature—grain and hops and fruit. Mr. Southall is of opinion that climatic conditions are regulated by successive cycles, drought alternating with moisture, that we must wait patiently till the raining period overtakes us.

The lamentable condition of the salmon fishing again has been by some Members of the Wye Fishery Board accounted for by the absence of floods; it is no doubt a contributory cause, but not the only one. I venture to suggest that the real cause lies in the continued draining operations which have been steadily pursued throughout the county during my lifetime. I have myself never denied a well founded appeal to drain land. The advantage to the farmer of draining some wet corner of the field, if not the whole, is manifest, and shows itself in a very short time; hence, draining is everywhere prevalent. Over the whole county the marshy land is disappearing, sinuous streams are

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straightened, and what we may call our natural sponges are wrung dry. The effect is not only to be noticed in the main artery—the river—but ponds are all nearly dry. The supply of drinking water from wells is anxiously husbanded. The water supply of dwellings is more and more doubtful every year. We have parted with the water which has been in the bounty of Providence stored for us. Productiveness of land has been the only thought, and now we find that we are confronted with an evil greater than the presence of a few wet fields and swampy places, which fulfilled a very important part in the economy of Nature, namely, a water famine. It is a work of the same kind as the disafforesting, which has been denuding of timber the greater part of Europe, having a serious effect on the climate and on the fertility of the soil. The Botanist has to deplore in drying up of ponds and marshes the disappearance of many of the river plants. The *Pinguicula vulgaris* and the *Anagallis tenella* have both disappeared from our neighbourhood. The *Utricularia* is no longer to be seen in Moccas Park, its only habitat in Herefordshire.

But the argument may be advanced, that if the drainage of land is so general, its effect must be to pour into the river more rapidly than before a large supply of water, which must inevitably cause serious floods. If we consider the water bearing strata as in the nature of a cistern, maintained to a certain level by rainfall, the prevalence of drainage operations causes a constant leakage, the rainfall must be sufficient to fill the cistern before the overflow can be observed in the form of flood. Again, the cause of a very high flood is often owing to a succession of smaller floods. When these were succeeded by storms, giving a really high river, the effect was much more marked and the heights of the river greater. The great alluvial flat in the parish of Letton, commonly called Letton Common, was some years ago drained by straightening the channel of the Letton Brook and deepening it. The consequence was that whereas Letton Common was often partly submerged for three weeks at a time, now the flood runs off in three days. The same fact may hold good in other instances, showing us that, whereas the floods may be more rapid, the river may rise quicker, the effect is not so continuous, and the periods when the river cannot be contained within its banks more rare.

Are we then to set our faces against all drainage operations in the present state of agriculture? We can hardly do so, and such action must be general to be of service. All that we can do is to observe these changes and satisfy ourselves as to the causes from which they proceed.

The question of water supply becomes year by year more pressing, the value of pure water to the community more and more felt. If this be so, action must before long be taken to control this valuable water supply, to permit the surface water to penetrate to the water bearing strata beneath, to watch carefully any important drainage system that

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may be promoted, and to bear in mind that in Nature the various forces counterbalance each other, and that if we attempt to interfere with this equilibrium serious evils may arise.

It has long been customary that the President should give some accounts of the various excursions made during the past year, but, as the chief features of these meetings are now narrated at some length and published by the Honorary Secretary, it will not be necessary for me to do more than to pass rapidly in review those meetings in which I was privileged to take part.

As regards the meeting at Woolhope, I was not well enough at the time to be present except during part of the day, but I think that the members were well repaid, for the weather was all that could be desired, and the grand view of the valley of the Wye, backed by the Welsh hills, from Backbury must always be reckoned as among the finest in the county. On reaching Adam's Rocks a halt was made. Mr. Moore described the remarkable upheaval of the earth's crust at Woolhope which has been so frequently enlarged upon by members of our Club in bygone years, and gives it the name by which it is content to be reckoned among Societies of a similar kind. Certain plants which may be called rare, were found in the course of the day's walk by Mr. Bickham and others. It may be mentioned that Mr. Paul Foley gave the Club special leave to enter his woods, for which they beg to tender him their best thanks. One cannot but think that a careful examination of the neighbourhood of the Woolhope valley might result in further proof of direct volcanic action, such as is furnished at present only in the quarry at Bartestree, which has been more than once visited by the Club.

The meeting in the neighbourhood of Mitcheldean I was unable to attend, and therefore must omit all reference to it; the weather was not propitious.

The day in which ladies were invited to attend was spent in visiting Eastnor Castle and its vicinity, and the kindness of Lady Henry Somerset in opening the Castle and its grounds to the Club was much appreciated. A goodly number left Ledbury in carriages for Wind's Point, whence in enjoyable weather the summit of the Herefordshire Beacon was reached on foot. After exploring the so-called cave, a descent was made to a point on the Ridgeway, where the carriages were met to convey the party to the Castle. The Mistletoe Oak was pointed out.

The only other mistletoe oaks in the county, as far as I am aware, are one in Deerfold Forest and another on the Bredwardine Hill, which I had the good fortune to discover when marking trees. I may add that the Moccas property can now claim the proud position of possessing two mistletoe oaks, when shooting in January on Woodbury Hill, adjoining Moccas Deer Park, I discovered another of these rare specimens of plant life: the oak is of considerable age, say 200 years

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picturesque and gnarled, but the situation is so remote that I fear it will not be visited by many. It grows on the west of the hill, the ground falling rapidly, almost perpendicularly, beneath it, and it is in company with a row of large limes, clearly native, which, I regret to say, have been cut down, and of which, with the exception of one specimen, only the stumps remain.

On reaching Eastnor the Members were invited to inspect the treasures of art which the Castle contains. The gallery of pictures, both ancient and modern, both Italian masters and very fine examples of Watt's noble work, would repay a more careful examination than time permitted us to give to them. The furniture and decorations were proof of the consummate taste and ability of the late Lord Somers, but the lover of this museum, as I may call it, of art treasures was constantly called away to admire the splendid views which each room commanded, wherein wood and water and distant hill combined to form charming and varied landscape, their beauty and effect heightened by judicious planting in which also the task of the late Lord Somers was conspicuous.

The Arboretum which was next visited was of particular interest, owing to the large number of conifers which had reached an age in which their full beauty was developed, enabling the planter to determine which species would best repay his labour, and satisfy in its maturity the promise which it held out when young.

I was invited with some of our party to visit Mr. Bickham's beautiful garden at Underdown, a garden which to the lover of rare plants offers an exceptional treat. Mr. Bickham by constant care had been able to present to the observation of the botanist an infinite variety of plants, which it would be impossible to particularise. Plants such as other gardeners have had a difficulty in growing are seen here in perfect health and beauty. Each plant is granted an allotted space to develop itself, and no more ; thus the effect of massing plants in a natural manner is given without crowding, and it is a lesson to all framers of herbaceous borders and the like.

The last Meeting of the year was held on Bredon Hill. As usual, the bounds which the arrival and departure of railway trains set on a day's excursion somewhat curtailed the time at our disposal. There was much to see, but the survey must necessarily be but hasty. A walk of over two miles through a pleasant rural district brought us to the foot of the Hill, a wild and diversified tract of pasture and wood—a natural park one might almost call it, from the summit of which no doubt a very striking view of the valley of the Avon and the Malvern Hills may be obtained, but the thick atmosphere prevented our seeing much more than the winding of the river beneath. To the botanist the excursion offered a peculiar charm, for, owing to our having quitted the Old Red Sandstone for the Oolite formation, the natural vegetation was com

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pletely changed. I must leave it to those possessed of more tenacious memories than myself to give a list of the various interesting plants which were gathered on the hill. Upon the summit Mr. L. Richardson, F.G.S., Honorary Assistant Secretary of the Cotteswold Naturalists' Field Club, read a very interesting paper on the Geology of the district. The course of rivers, which, had the day been more propitious, we should have been able to trace, was a distinguishing feature of the paper, and the changes which had taken place in the district. The various problems presented by the somewhat intricate nature of these changes he did his best to solve. His papers will repay a careful perusal.*

In bringing these somewhat desultory remarks to a close, I think that I may say that the year may be on the whole pronounced a successful one, with a fair attendance at our field excursions. I deliver the seals of office into very competent hands. I thank the late President, the Honorary Secretaries, and others for the very friendly feelings with which they have been content to bear with my deficiences; and, if the labours of the past year have been a pleasure, it is also a pleasure to me to hand the interests of this Club to one who is so well able to guard them. It may be in his power to do more than I have done—to organise working parties for the study of Botany, Geology, and the like. A companion volume to our excellent Flora, giving the Geology of the county, would be much valued. At any rate, the work of the Woolhope Club is not completed. There are still fields of research; it must still remain a great educative power; it is still in its province to gather together many glad to exchange ideas on the subject of natural science; and it is still capable of granting opportunities to the lovers of natural beauty to become acquainted with some of the fairest spots which this favoured land can furnish.

* See supra for Mr. Richardson's papers—'The Results of Denudation as seen from Bredon Hill," p. 55; and "Notes on the Geology of Bredon Hill,' p. 62.

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Woolhope Naturalists' Field Club.

FIRST FIELD MEETING, THURSDAY, MAY 28TH, 1903.

SHUCKNALL HILL, WESTHIDE, YARKHILL, AND TARRINGTON.

The upcast of Silurian rocks known as Shucknall Hill, situate about six miles north-east of Hereford, formed an attractive item in the programme of the First Field Day in 1903 of the Woolhope Club on Thursday, 28th May; other places included being Westhide, Yarkhill, and Tarrington.

Forty-six years ago, on 25th August, 1857, the Club visited Shucknall Hill. In the fifties brakes were requisitioned; to-day the railway admirably served the purposes of the company, the main portion of which boarded the 9.45 a.m. train at Barr's Court Station for Withington, where they were met by the Rev. A. G. Jones, Vicar of Yarkhill, who acted as Director.

The district visited presented the geologist, the botanist, and the antiquary with material for profitable study. For the non-scientific, too, there were many allurements, and the nature-lover spent an enchanting day. The scenery as viewed from the top of Shucknall Hill at this time of the year is varied, and its beauty well repays the visitor who will ascend the southern slopes from the old Hereford to Worcester road, about two miles east of Withington Station. Hill and dale, woodland and meadowland, flowers and trees, were clothed in the verdure of full springtide, and bird-life was in evidence on every hand, the lark pouring forth an almost continuous song.

Walking northwards from Withington Station for half-a-mile, a halt was made at "The White Stone," where the road to the village is crossed by the old Hereford to Worcester road, for the inspection of "The White Stone," an upright conglomerate stone, near to which is another conglomerate stone which may at some period have formed its basement.

From the peculiarities of its shape Mr. Robert Clarke is of opinion that it is a portion of the shaft of a wayside cross—probably turned upside down.

The stone stands at the junction of four roads. The lettering is much disfigured. As it is one of the early dated stones in the county, and what remains of the lettering may soon become undiscernible, Mr. Alfred Watkins has given us photographs, and Mr. Robert Clarke has supplied the following observations to accompany his drawings.

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On the four sides of the shaft the following mutilated inscriptions are deeply cut in large letters :—

"This is the ro ... to Hereford. T.D. 1700."

"This is the ro ... to RO" (*Ross*).

"This is the road to Worcester, Ledbury." (*The latter in smaller letters underneath the former.*

"This is the ro .. to Leo" (*Leominster*).

Turning eastwards along the Worcester road, after a further walk of a little over one mile. the old Roman road is seen entering upon the right. The extension of this road westwards passes south of Withington Station, by Lower Wilcroft, Lugg Mill, thence forming the Hereford City Municipal boundary through Holmer, Huntington, and Stretton Sugwas to Kenchester (Magnæ).

The prolongation of this Roman road eastwards might have led as far as Worcester, but certainly as far as Stretton Grandison. Mr. Moore has no doubt that traces of the road will some day be found south of the old main road to Worcester; the continuation would lead by Yarkhill Court, Covendor, and Watery Lane, a little south of Monksbury Court, direct to Stretton Grandison.

The position of a Roman station at Stretton Grandison is strengthened by numerous finds in 1842, during the construction of the foundations for the aqueduct, near Canon Frome canal wharf, to carry the Hereford and Ledbury Canal over the river Frome. The name of the station is unknown. On the authority of Dr. Bull, see *Transactions* 1882, page 255, the name Cicutio or Circutio "is named, with five others, by the anonymous geographer of Ravenna, in his *Chorography* as existing between Caerleon and Magna.* Baxter, in his *Glossarium Antiquitatum Britannicarum*, placed it at Stretton Grandison, and it appears here on all the old maps." In the absence of any explanatory text we must consider the identification of Cicutio with Stretton Grandison as at least uncertain. The name is not mentioned in Antonine's Itinerarium. Moreover, Stretton Grandison is not upon the most direct route from Caerleon to Magna,* which would be through Usk (Burrium) and Abergavenny (Gobannium); otherwise via Monmouth, through St. Weonards, Wormelow, Callow Hill, and Hereford.

So far as we are aware no traces have hitherto been reported of any Roman road from Stretton Grandison eastwards to Worcester. In a southerly direction we have the Roman road to Gloucester via Newent. It is one of the longest straight roads in Herefordshire, known as an excellent trotting road, and extending six miles through Ashperton, by the Trumpet Inn, through Pixley, Aylton, and Little Marcle, where it enters Gloucestershire, in the parish of Preston, still retaining its

* Magna (Kenchester) is now more generally spelled "Magnæ" by scholars of the Itineraries. There was another station called Magna at Carvoran, on the south of the great Wall in Northumberland.

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"THE WHITE STONE," IN WITHINGTON PARISH.

No. 7. To face No. 8, between pages 108 and 109.

Photo. by A. Watkins.

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"THE WHITE STONE" IN WITHINGTON PARISH.

No. 8. To face No. 7, between pages 108 and 109.

Photo. by A. Watkins.

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straightness in its continuity. From Preston the road conducted to Gloucester through Dymock and Newent.

Leaving now the subject of Roman roads we revert to the proceedings of the day. We left the party on what is known in the present day as the *Old* Worcester Road over Frome's Hill, as a distinction from the more frequented and more modern road through Ledbury. The walk was continued for a further half-mile, or a total walk of a little over two miles from Withington station. A halt was made at a drinking trough on the left of the road, supplied through a pipe with, so we were assured, a never-failing source of water, and locally dignified with, or known by, the name of "The Spout."

From "The Spout," on the elevation of 291 feet above sea level, the ascent of Shucknall Hill was commenced. The ridge at the top of the Quarries attains the elevation of about 500 feet: a triangulation survey station about half-a-mile north-eastwards gives the height of 563 feet.

Near the Zion Primitive Methodist Chapel the party divided, the geologists to examine the Quarries at the southern base of the hill, the botanists to search the broken rocky ground more carefully, whilst the remainder of the party under the guidance of Rev. Preb. W. H. Lambert and Rev. A. G. Jones, were conducted over the hill and through an extensive wood to Westhide Church at the northern base of the hill.

The principal features of the Church were given by Rev. Preb. W. H. Lambert, and a short paper was read by him at a later period of the day's transactions. In the Churchyard is the shaft of a cross on a circular stepped basement, surmounted by a sun dial. It bears the inscription, "John Langford, Lancelott James, churchwardens, 1739." An old yew tree grows in the southern portion of the churchyard. Hard by stands Westhide Court, and the owner, Mr. W. Jenkins, generously invited the company to light refreshments. Afterwards a survey of his house and grounds was made. On the lawn lies prostrate an extraordinary shaped fallen tree, said to be a Wych elm, and this attracted much attention. Around the house are some interesting remains of a moat, which at one time must have been very extensive. It is surmised from the configuration of the ground that the site of the church was formerly surrounded by a moat.

From Westhide Court, after examination of the extensive moat, the return journey over the hill was made by varied routes. The cutting in the lane, near Westhide Court, through rocks of the Upper Ludlow formation, an extensive exposure of Aymestrey rock in a quarry, long disused, distant about 200 yards south of the above-mentioned cutting, the aqueduct quarry at the north of Ecknell Coppice, through which the water supply to the Court is conducted, and a small quarry in a field 200 yards north of Drythistle Cottage were all visited by some of the party.

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On the descent from Shucknall Hill, and near the large eastern quarry on the south, is a pump, supplanting an old dangerous uncovered well. It bears the following inscription:—"Through the humane exertions of Captain Cleife, aided by Lady Emily Foley and a few neighbours, this pump was fixed to prevent the loss of another valuable life in the well beneath. October, 1856."

The trysting place, appointed for the separated parties, was on the main road to Worcester, near the 6th milestone from Hereford. Here the parties reunited, and a walk of one mile brought them to Yarkhill Vicarage.

Some local fossils were exhibited by the Vicar, Rev. A. G. Jones; light refreshments supplied, and Yarkhill Church was visited under the Vicar's guidance and explanation combined. A paper read by him accompanies this report of the day's proceedings.

The fine old symmetrically grown yew tree in the southern part of the Churchyard, with a solid bole about ten feet high before the forking into huge branches, has a girth of 18 feet at five feet from the ground.

A pleasant walk across the fields, crossing the river Frome, led by strawberry plants covering about sixty acres, then by Stoke Edith Station, to Tarrington.

At Tarrington Dr. J. H. Wood exhibited his collection of Macro and Micro Lepidoptera and Diptera. This collection contains nearly 1,300 species of Lepidoptera out of the total of nearly 2,100 for the whole of the British Isles.

The collection is remarkable as an example of what one man can perform by assiduous work in the field, and elaborate classification and delicacy of manipulation at home. The most interesting point about it is, that it is strictly local and limited to the products of the county. Our *Transactions* already chronicle some of Dr. Wood's entomological work and discoveries. See in *Trans.*, 1891, page 257, Nepticulæ of the Woolhope District. For a list of Herefordshire Lepidoptera see *Transactions*, 1866, page 309; 1887, p. 104; also 1892, p. 280, which latter list is repeated from the Addenda to the Volume, 1886—1889, page 9.

Some members visited Tarrington Church, in reference to which a few remarks will be found in *Transactions*, 1899, p. 108.

TARRINGTON CHURCH.

In the Church Mr. Robert Clarke pointed out to some of the Members two very interesting Norman windows (supposed by some to be pre-Norman) in the North side of the Chancel. The external heads of the arches are carved with an interesting pattern; the side jambs are quite plain. On the faces of the inside arches are a series of circular sunk panels on one, and oval pointed on the others; the jambs are plain.

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Some remains of 14th or 15th Century glass are worked up in a South window of the Chancel: the Virgin crowned, an Eagle, emblem of St. John, and other fragments of foliage and canopy work.

Underneath the tower is fixed an Early coffin slab, with an incised plain cross on its face; on the cross arms are two incised rings supposed to be typical of the two thieves.

The Rector, Rev. A. E. Green-Price, states that an entry in the Parish Registers of May 3, 1644, records the burial of John Pralph or Praulf, Vicar of the parish, murdered by some of the Parliamentarian soldiers near St. Anne's Well, Stoke Edith. Mr. Pralph was upwards of 80 years of age, and had been Vicar of Tarrington for 42 years, from 1602 to 1644. The soldiers were a part of the garrison of Gloucester, who overtook him on his way home from Hereford. In reply to their challenge he declared himself to be "for God and the King." They shot him on the spot.

The exact site of the burial in Tarrington Churchyard is not now known.

At 3.30 p.m. luncheon was served at the Foley Arms, Tarrington.

After luncheon, some business of the club was transacted, and a paper on "Westhide Church and Neighbourhood" was read by the Rev. Preb. W. H. Lambert.

RECORDS OF FACTS.

BOTANY.

Gnaphalium sylvaticum grows in the wood on Shucknall Hill, and is here mentioned, because it is not included in the Herefordshire Flora as growing in this district (6) of the Map of the Flora.

Amongst the more rare finds were *Trifolium filiforme*, and *T. striatum*, *Potentilla verna*, *Ranunculus parviflorus*, and *Marrubium vulgare*.

We must also record that the rare grass, *Kœhleria cristata* grows on Shucknall Hill, having been discovered by Rev. A. Ley several years ago.

Amongst mosses the Rev. C. H. Binstead found the uncommon species *Bryum torquescens* B. and S., in short grass on stony banks about the large quarry on the southern side of Shucknall Hill.

Mr. Binstead also records finding in the Forest of Dean in May, and somewhat plentifully, *Bryum rubens*, Mitt., between Symonds Yat and Staunton. He is of opinion that it ought to be found in Herefordshire.

The Rev. A. Ley adds to the list the following mosses met with to-day: *Barbula lurida*, *Tortula stellata*, *Orthotrichum cupulatum*, and *Phaseum floerkianum*.

MOLLUSCA.

The snail, *Helix ericetorum*, very local in Herefordshire, is common on Shucknall Hill. Reference to the Table of Distribution of

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Mollusca, by Arthur E. Boycott and Ernest W. W. Bowell (in *Transactions*, 1898, p. 9), limits its distribution to districts VI. and VII., N. Many of its empty shells lay about the large quarry, on the authority of Dr. J. H. Wood.

ORNITHOLOGY.

Mr. Hutchinson reported a pair of the Mealy Redpoll (*Acanthis linaria*) in his garden on Aylstone Hill, Hereford, and the record of the Lesser Redpoll (*Acanthis rufescens*) in the parish of Kimbolton.

Mr. Frank James writes :—"I saw an Eared Grebe (*Podicipes nigricollis*) on the Burcott Pool on the 14th April last. I have the Great Crested Grebe (*Podicipes cristatus*) and the Eared Grebe set up, and am well acquainted with the bird. On the occasion in question I got my boys to drive the bird within twenty yards of me.

Mr. W. C. Blake writes from Acacia Lodge, Ross :—"At the end of last March a male specimen of the Great Crested Grebe (*Podicipes cristatus*) was brought to me for identification. It had nearly completed its spring plumage, its crest being nearly developed. It was obtained on the Wye, near Backney Bridge.

Business was here suddenly interrupted by a terrific clap of thunder, causing a hasty retreat to the railway station, where a welcome shelter was found from a very heavy downpour of rain, accompanied with thunder and lightning.

Departure from Stoke Edith by the 5.16 p.m. train brought the members to Hereford at 5.30 p.m.

Ordnance Survey Maps for the District.

On the scale of 1 inch to 1 mile. Sheet 198.

On the scale of 6 inches to 1 mile. No. 34 N.E. and 34 N.W. and 34 S.E. Shucknall Hill is given on 34 N.E.

The Geological Map is 43 N.W. Shucknall Hill appears in the north-east corner of the Map. Geologists should purchase also 43 N.E., which embraces the south-eastern portion of the Woolhope district and the southern part of the Malvern Range.

The company was headed throughout the day by the venerable President of the Club, Mr. H. Southall, F.R.Met. Soc., and included the following :—Members : The Revs. D. M. Abbott, C. H. Binstead, C. Burrough, C. B. Caldicott, H. M. Evill, P. H. Fernandez, H. E. Grindley, E. Harris, D.D., C. Harington, A. G. Jones, Preb. Lambert, Augustin Ley, H. B. D. Marshall, R. H. Warner; Messrs. J. U. Caldicott, R. Clarke, H. Easton, H. E. Jones, J. W. Lloyd, G. Marshall, Dr. J. H. Wood, and the honorary secretaries, Mr. T. Hutchinson and H. Cecil Moore, and Mr. James P. Pilley, assistant secretary. Visitors : Rev. E. Gedge, Vicar of Marden, Messrs. A. J. Graham, J. H. Vevers, and W. H. Woodcock.

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Woolhope Naturalists' Field Club.

WESTHIDE.

By Rev. Preb. Wm. H. Lambert.

I believe that it is sometimes supposed that the rector of Stoke Edith is a survival of the race of pluralists who were very righteously extinguished by the Pluralities Acts passed in the earlier part of the late reign, serving as he does two churches, so separated not by distance only but geographically, as those of Stoke Edith and Westhide. Westhide is near six miles from Stoke Edith by the nearest road available for wheeled vehicles, and nearly three by footpath or bridle road; Shucknall Hill intervening, seems to interpose a natural barrier between the two, so that there is little intercourse between the two places. Yet the two have been united in one benefice from the earliest times of which there is any record, for, as far back as the Bishops' Registries reach, Westhide is described in them as a perpetual curacy, a chapelry of Stoke Edith.

Up to a comparatively recent period the rector of Stoke was *ex-officio* Lord of the Manors both of Stoke Edith and Westhide. But in the last century an arrangement was made between the Foley of the day and the then rector by which this dignity was transferred to the owner of the Stoke Edith Estate. Thus the present owner, Mr. Paul Foley, is Lord of the Manor of Westhide, although the only beneficial interest which he has in it is derived from certain nominal rents received from a few cottages built on land which was formerly waste. The greater part of the parish belongs to the Westhide Court Estate. Former owners of this estate are Richard Monnington, John Kedward, J. D. Kedward, who died not so many years ago, the Rev. Edward Bulmer, Joseph Brooke, Colonel Samuel Scott, and William Jenkins, the present owner.

The present Court House is not ancient, but it must have been a place of some importance for a long time past, judging from the fish-ponds still remaining, whether we regard them as having been always what they are now, or whether we see in them the remains of a former moat surrounding the house, as suggested by the present rector of Cusop, who was sometime curate of this parish.

The church consisted anciently of the large low tower at the west end, which is still standing, with a nave and chancel, but the latter had been rebuilt in comparatively modern times out of the materials of a fifteenth century building. In the middle of the fourteenth century a very fine south aisle or chapel was added which had, as was usual, its

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separate altar and wooden screen, the entrance being on the south side, to which a porch had been added about two centuries later. By a curious arrangement the entrance for the parishioners was provided at the south-west angle of this chantry close to the tower, and was used as such down to a comparatively recent period. The aisle is separated from the nave by an arcade of two plain arches, and the chancel arch, belonging to the same design, is placed close to the south side of the nave, the object apparently being to permit a view of the chancel altar from the south chapel, which is considerably more important in scale than the nave. This will account for the arch being so very far out of the centre line with the nave.

In a plain recess in the south wall of the aisle there is the tomb of the founder with his effigy : two mutilated figures which were laid in the floor of the chapel have been placed in the wall at the south-east angle. The heads and the feet of these two figures were perfect almost within living memory, but were deliberately cut off and broken to pieces to make room for some pews erected by the then owner of the estate. Standing against the west end of the chapel there is also a fine alabaster slab, bearing engraved figures of a male and female, with sixteen children, eight sons and eight daughters. The inscription round the stone is so thoroughly defaced that it is almost impossible to decipher it accurately. It commemorates Richard Monyngton and Alice his wife. There is a fine piscina in the south wall of the aisle, and the altar here, as well as that in the chancel, had each a pair of stone brackets with carved heads, which are still in a good state of preservation.

The only record in the parish register of repairs of any importance is dated 1801. In that year (says the Register) the church of Westhide was ceiled, and a partition wall built between the body of the church and the belfry. In the same year the pulpit and reading desk were considerably improved, a new cloth hung on them, and the sounding board placed overhead. At the same time the windows were new-glazed and improved ; new kneeling mats procured, a shoescraper had, the church door repaired, and a new lock put on it. The entire cost of these repairs and presumed improvements is not stated. It was probably defrayed out of the church rates. The recorded subscription list does not certainly represent a large amount. "To defray the expenses," continues the Register, "the parishioners were assisted by a subscription of five guineas from the Rev. John Napleton, D.D., rector of the parish, of one guinea from J. H. Apperley, Esq., of Withington, and also of one guinea from the Rev. W. J. Rees, M.A., curate of the parish." It is added that the part of the church belonging to the Court Estate was ceiled and repaired at the expense of Mr. John Kedward, the proprietor in the same year.

This refers of course to the south aisle, which was appropriated to the owner of the estate for the time being, who seems consequently to have made himself responsible for the repairs. The last repair of any

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sort done by one of them seems to have been the occasion of the mutilation of the two Elizabethan figures spoken of already.

When the church underwent restoration in 1866-7 the then owner of the estate, the late Mr. Joseph Brooke, resigned all claim to special ownership and consequent responsibility for the repairs, contributing however handsomely to the general restoration fund. Out of this fund the aisle was restored and has ever since been free and open to the parishioners at large.

The church (with the exception of the tower of which we shall speak presently) underwent restoration in the years 1866-7. It was at that time in a very dilapidated condition, and a good deal of the present work is new. The north wall of the nave is new, and so is the chancel, the new one being some feet longer than the one previously existing. The vestry also and the south porch are new and the roofs of the south aisle and of the chancel. The roof of the nave is the old one restored.

The small window which at the time of the restoration occupied the east end, had evidently (in the opinion of the architect) been removed from some other part of the church. It has now been rebuilt into the north wall of the chancel, the present east window being new.

An encaustic tile of the fifteenth century, bearing a representation of the keys and the sword emblematical of SS. Peter and Paul, found during the progress of the work, has been inserted for preservation into the dwarf wall which now separates the chancel from the nave. A small piece of fifteenth century stained glass was also discovered and has been placed in the north window of the chancel.

There are some faint indications of ancient paintings in patterns upon the aisle arches and the splay of the head of the east window in the south chapel. The remains of the old coffin slabs of good design (as the architect remarks), which are placed in the east wall of the porch were found in the old walling: also, I believe, the basin for the holy water inserted in the inner arch.

The tower was a very large and massive structure of the 13th century. It was built without mortar, nothing but loam having been used, and it had never been carried beyond a few feet above the nave roof. The architect considered it as interesting "only as being one of several instances in the county where a large tower, quite out of proportion with the church, was begun and the design afterwards abandoned." In this instance further progress may have been prevented "by failure of the foundations and the bad quality of the masonry." [See architect's report to the Rector, July 25th, 1865.] There are traces of a large staircase turret once existing at the south-western angle. The most curious part of the tower is the arch opening into the nave. "It is a twelfth century arch evidently inserted long after the tower was built, and was probably the old chancel arch, removed to its present

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position in the 14th century. The dilapidation of the tower afterwards destroyed the arch, and it was rebuilt in the 16th century, the outline being changed to the Tudor or four-centred form."

This arch was thrown open in 1880 by removing the brick partition which had filled it up and separated the tower from the nave.

At the same date a massive buttress was added on the north side of the tower to resist the thrust of this arch, the cracks in it were cut out and thoroughly repaired, and all loose masonry repaired with new stonework laid in cement.

There are three bells in the tower, the largest of which (being cracked) was then recast.

The first clock, according to the Parish Register, was set up in 1728, and an acre of land was given (so in the Register, but the quantity is really less than a statute acre) to provide for the expense of winding. The present clock was purchased and erected in 1897.

In the churchard is the shaft of the churchyard cross supported on three circular steps, and now surmounted by a sun-dial placed on it in 1729.

The yew-tree at the south-east corner of the churchyard is a fine one.

In the churchyard is buried the wife of Colonel Browne, who once rented Westhide Court for a few years. He was brother to Sir Samuel Browne, the distinguished Indian officer, who died not long since, and who for a short time rented Barnamore House in the parish of Withington, not far from Westhide. Here also lie the Rev. Thomas Hugh Bird and his first wife. Mr. Bird was for twenty years curate of the parish, during part of which time he was also vicar of Yarkhill, where he built the present vicarage house and removed to it in the year 1856 or 1857, remaining there until his death in 1868. His elder son, who was born at Westhide, now lives at Drybridge House, Hereford, while his younger son is rector of Thruxton with Kingstone in this diocese and county.

The father of Mr. Thomas Hugh Bird, and grandfather of the two gentlemen last mentioned, was rector of Mordiford and Dinedor, well-known and much respected in the county. He was a talented musician, and an antiquary of considerable attainments, in addition to his diligence in the exercise of his sacred calling. He was also an active magistrate, a circumstance which secured for him recognition in a quarter where it might hardly have been expected. Thomas Winter, who afterwards became famous under the name of Tom Spring, as champion of England, in days when boxing was more highly esteemed than at present, was a native of Fownhope. It is said that on a certain occasion Winter was seconding a man in a local fight, and that Mr. Bird, in his magisterial capacity, interfered to put an end to it. Winter committed an assault upon him by bonneting him, as it is called, presumably to prevent his recognising those who were present. Winter, however, was recognised,

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and a warrant was issued for his apprehension. He got out of the way to escape it and found his way to London, where his pugilistic abilities became known in a wider circle, and he rose to the head of his profession. Each year it is said, on the anniversary of Mr. Bird's birth, Tom Spring drank his health, for to his interference at that village fight the champion owned his after success.

Westhide has produced a poet, or at any rate a versifier, one William Morris, son of a small farmer, who owned a house and a few acres of land in the parish when I first became connected with it 45 years ago. The son had had few educational advantages, but he was a man of some intelligence and of a reverent mind who took a great interest in antiquarian matters. In anticipation of the occasion of the restoration of the church which was completed, with the exception of the tower, in 1867, William wrote a copy of verses consisting of a good many stanzas. Dr. Moore and another correspondent since have kindly sent me copies of it, but I do not inflict it upon you as its literary merits are not great, though its sentiments are devout and unexceptionable. It will be gathered from these remarks that such interest as belongs to Westhide is centred, so far as I know, almost exclusively in its church. If it has been in time past the scene of stirring events or the cradle of those who in after time became prominent, the record of it has not been preserved. It is, I presume, with a parish as with a nation. It is happy if it has no history.

So the people of Westhide are, I believe, fairly prosperous and happy, as I hope they may long continue to be.

SHUCKNALL HILL.

By Rev. A. G. Jones.

Shucknell, or Shucknall, a contraction of Shucka's Hill, for so, according to the late Mr. Flavell Edmunds, is its derivation, though not very pretentious in height, being at its highest point only 563 feet above Ordnance datum, yet is a conspicuous landmark over a considerable portion of the country, due to the abruptness with which it rises out of the surrounding plain, and to the long line of Scotch firs on its crest. This elevation is situated in three parishes, Weston Beggard, Yarkhill, and Westhide. The first-named parish claims the greater part of the population on Shucknall Common, the steep incline on the south-west side, which is partly covered with gorse and studded with cottages, many of which belong to small freehold occupiers. Mr. P. H. Foley is Lord of the Manor, to whom "chief rent" is paid.

The view from the south ridge is magnificent on a clear day. There may be other views of wider extent in the county, but I question whether there is any more picturesque and pleasing to the eye. Looking

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south we have the rich Frome Valley in the foreground, further on Stoke Edith Mansion, Church, the sloping and wooded Park, with a background formed by the whole ridge of elevation from Backbury to Seager Hill. Turning east we have a grand view of the whole range of the Malverns standing out in bold relief. To the west we have Dinedor, Aconbury, Skyridd, Sugar Loaf, and the Black Mountain range. To the north Dinmore Hill, Shobdon Park, Clee Hills, etc.

From Woodgate Cottage on the north-west of Shucknall Common, go along the ridge to Drythistle, and you have a most enjoyable walk of about a mile, which in the wettest times is always dry under foot from the natural drainage of the rock on edge and the roots of the Scotch firs. Those who know the ground can well appreciate the beauties of that walk. The plateau is narrow at the west end, but widens out as it reaches the highest level. The elevation on all sides is bordered by woodland, with the exception of Shucknall Common.

The principal wood is on the slope of the north side, called Westhide Wood, which covers a large area. The woodland in this neighbourhood must have been very extensive years ago. Thus about a quarter of a mile west of The Spout we have Woodfield, on the north of Westhide, Ocle.

On the east of Shucknall elevation we have Clatter Park, the Cotts, Woodmanton, Little Woodmanton, Woodbury, The Grove, all names indicating woodland. Forty years ago the cottagers on Shucknall Hill were great strawberry growers, and a visit to their gardens formed a favourite excursion from Hereford during the season of that delicious fruit.

There is no indication of Shucknall Hill ever having been a fortified camp, probably from its being too large an area to hold, and from the want of water at the top. At the base of the hill there are abundant springs of sweet water, charged, however, rather largely with calcium carbonate. A very noted water supply is The Spout, which has never been known to be dry. On the east end of the Common, half way up the slope of the hill, is a well with a pump not always productive. These are the two sources of water for Shucknall Hill people. Another noted spring on the south-east side supplies Yarkhill School and Woodmanton through pipes.

The Rev. A. Ley has kindly informed me that Shucknall and district botanically is most interesting, and I am quoting from his letter to me : " The hill is noted chiefly as the habitat of a rare moss found only in two spots in Herefordshire and on the Sussex Downs, ' Pottia Coespitosa.' Other interesting gems—Sedum reflexum in the quarries, Marrubium vulgare (white horehound) on the Common, *Babington Botany*, rare. The wood termed Westhide Wood is full of a rare bramble, Rubus serpens." Mr. Ley called my attention some years ago to a rare fumitory (Fumaria pallidiflora) growing near Yarkhill church. I noted

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it with interest year after year. For the last two years I have failed to find it. This year, 1903, however, it appeared as before, later than the usual time.

Shucknall elevation, geologically, is interesting as correlated to that magnificent exposition of the Silurian system in the "Woolhope Valley of Elevation." Probably the same subterranean disturbance that upraised that district noted in the geological world, was the cause of forming Shucknall Hill, as well as the protuberance of Upper Ludlow at Hagley. Shucknall Hill is of the same formation as Backbury, and in fact the whole outer ridge encircling the Woolhope Valley. It may be described as Aymestrey rock, the equivalent of Aymestrey limestone with Upper Ludlow beds thrown up at fault, wedge-shaped at a high angle, protruding through the Old Red Sandstone, which has been denuded off. On examining the different exposures round Shucknall elevation, it will be seen that the strata dip quaquaversely from a centre of elevation. Thus, at the Spout Quarry the dip is S.S.W., whereas in a quarry on the other side of the hill, directly opposite at Westhide, the dip is N.E. Near Yarkhill School the dip is E.S.E.

A bird's eye view of Shucknall elevation would show it to be a ridge somewhat of a flattened horse-shoe shape with wide opening facing north, the whole sloping S. to N. An intermediate minor ridge between the east and west sides, but much nearer the former, divides the whole horse-shoe valley into two unequal valleys. The wider valley, starting centrally from the north side of the top of the large quarry on the south side of the hill, leads down to Westhide Church. The other valley opens out east of Westhide.

The Aymestrey rock is best exposed at the large quarry just spoken of. It forms a conspicuous object coming up the Stoke Bridge road from Stoke Edith. Here the beds are tilted at a high angle, dipping S.E. This quarry used to be largely quarried in former times for road making in the neighbourhood, before the Clee Hill stone came into general use. At present quarrying is going on after a rest of some years. Some of the rock, especially what the quarry men call Blue Rock, is exceedingly hard and durable. It has no cleavage, is very unfossiliferous, scarcely affected by acid. The fossils, such as they are, are difficult to hammer out, from the toughness and hardness of the matrix.

Fossils are best found in the beds on the west side of this quarry, underlying Blue Rock. Crossing over the hill to Westhide, and on the west side of the intermediate ridge spoken of, is a fine quarry, with bold escarpment, where Aymestrey rock is overlaid with Ludlow rock and shale. Here may be observed a noticeable fault Not many fossils are to be had here. Following the line of the ridge in the direction of Westhide, about 200 yards below this quarry, the Ludlow Rock and shale are cut through rectangularly by a cart road, which forms a deep

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cutting. Here the Ludlow beds may be observed to be contorted and twisted in a variety of ways. About a hundred yards below this cutting, still in the line of the ridge, is another quarry now being quarried for stone for building at Westhide Court. Here a fossiliferous bed about a foot thick is to be noticed, composed of rhynconella, orthis, spirifer, cemented together into a very hard mass by infiltration of carbonate of lime. The Spout Quarry, now disused, contains fossils of Upper Ludlow type.

I have searched for the Ludlow Bone Bed, but have failed to find it with any certainty. Something like it appears in a quarry north of Drythistle, in a soft carbonaceous band two or three inches thick—also in a small exposure of Uppermost Ludlow, by the roadside near Yarkhill School. I cannot, however, detect fish remains. The Aymestrey Rock does not to my knowledge contain Pentamerus Knightii or galeatus. The commonest fossils in Aymestrey beds are Strophomena depressa, Atrypa reticularis, Rynconella Wilsoni, Orthis elegantula. Trilobites are not uncommon in the large quarry—Phacops caudatus, Calymene Blumenbachii.

YARKHILLL.

By Rev. A. G. Jones.

Yarkhill, or Yarcle, as it was often formerly written, takes its name, according to the late Mr. Flavell Edmunds, from the Saxon, meaning "sloping hill" or "slope of the hill."

Yarkhill proper would be on the slope of the hill, i.e., on the south slope of Shucknall hill, for Yarkhill, as is generally understood now, consists of the Court and the few cottages near the church. All other houses and centres of population in the parish are distinguished by particular names—such as Little Yarkhill, Shucknall Hill, The Castle, The Cotts, Garford, Monkhide, Monksbury Court, The Grove, Newtown, Fellingbridge, Green Lane, Covender, etc.

The parish is very straggling and disconnected, and has not much to boast of historically and archæologically.

The Church.—This was originally a late Norman or Transitional Church, as may be seen by the capitals which were in the chancel arch before its restoration in 1862. The Norman font and a Norman coffin lid probably are the remains of the original building.

The original porch was Early English. Some of the woodwork of the old wooden structure, with dog tooth ornament, can be seen in the present roof of the modern erection. The doorway is Early English, and a little above the arch (let into the wall) is a curious stone carving of the crucifixion. The lower part of the tower is Early English, and the

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YEW TREE IN YARKHILL CHURCHYARD. TAKEN FROM THE SOUTH-EAST.

No. 9 To face page 121. *Photo. by Rev. A. G. Jones.*

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corbels supporting the original roof may still be seen. The old roof of the nave was retained at the time of the restoration of the church. The church, before restoration, was in a very dilapidated condition, and contained a good deal of what is usually called "churchwardens' architecture." Though most substantially and soundly restored, it is to be regretted that more of the old features were not retained. and the church brought back to the original type. The churchyard contains several monuments to the Vevers family, who occupied the Court for several generations, also to the families of Hall of Garford, Moore of Monksbury, etc.

There are no particularly old monumental records, which is surprising, as an influential family of the name of Abrahall, mentioned in Webb's Civil War, lived at Monksbury Court for many years, and their names are recorded in the burial register. The oldest monument is a stone slab let into the north wall of the vestry, in memory of one Francis Steadman, 1671, a former vicar who held office for 47 years. The old register is in good preservation, 1559 to 1784. It contains a record of three persons in the same family dying of plague in July, 1644. The bells are four in number, one of which is cracked, and the whole want rehanging; there are the remains of a sanctus bell.

The old yew tree in the churchyard is worth observation. It is 18ft. in circumference at 5ft. from the ground, and increases in girth up to 10ft., whence it branches out. It is particularly symmetrical and well-grown.

The Court was originally on the island surrounded by the existing moat. A family of the name of Harris lived there and owned the property before it passed into the Foley estate. The present Court was erected more than a hundred years ago.

The old vicarage house was on the north side of the churchyard on a site now occupied by the kitchen garden of the Court. It was a picturesque old-timbered building, was pulled down at the time the church was restored, and some of the old timber was used for the churchyard gates, etc.

The present vicarage was erected in 1855, by the late Rev. T. H. Bird, vicar, who has left his mark on the parish. It was through his instrumentality the church was restored, and at his own expense he built the main portion of the present fine national schools. Ever blessed be his memory.

A monastic establishment once existed in the parish where Monksbury Court now stands. A piece of the wall of the old chapel was to be seen a few years ago. Adjoining Monksbury is the hamlet of Monkhide.

It is not easy to account for the origin of the name of a place called "The Castles," in this parish—on the Frome's Hill road. There

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appear to be no remains of any stronghold. Might it have been a Roman out-station or small garrison (?) as Castle is "Castellum," a little fortress. It would be on the Roman road between Kenchester and Worcester. The Castle at Munsley is on the Roman road between Gloucester and Leominster, and there is no trace, I believe, of any fortification there.

The people of Yarkhill, in the olden days of Merrie England, must have been fond of the customary sports of the times—bull baiting with dogs—for there exists in the parish a place called the Bull Ring.

NOTE.—The 13th Century Woodwork of the Porch was found in the roof of a dilapidated wooden porch of no antiquity. The original Norman Chancel Arch had been replaced by a 16th Century Arch. The narrowness of the opening had prevented the use of the chancel except for Holy Communion. The wider arch was put in order that the chancel might be used at all services.—THOS. BLASHILL.

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Woolhope Naturalists' Field Club.

SECOND FIELD MEETING, THURSDAY, JUNE 11TH, 1903.

CRICKHOWELL.

FOR the special benefit of the botanists Crickhowell was selected for the Second Field Meeting of the year 1903; early in the month of June was chosen as a favourable time of the year for seeing the very rare plant, *Pyrus minima*. Geologists who had seen so much of the Old Red Sandstone in our county rejoiced at the prospect of treading upon Carboniferous Limestone and Millstone grit on Pen-cerig-calch. Archæologists could not withstand the opportunity of viewing, amongst other inscribed stones, an Ogham inscription. Guaranteed a fine, clear day, the programme was attractive enough to draw all lovers of healthy climbing of hills amidst beautiful scenery. Alternative routes, influenced by the conditions of the weather, were presented in this programme, a portion of which is herewith reproduced :—

Upon arrival at Crickhowell the botanists will walk without delay, under the guidance of Rev. Augustin Ley, to the habitat of rare plants at the Llangattwg Limestone Quarries, two miles in a south-westerly direction.

Provided the weather is fine the remainder of the party will walk in a north-easterly direction for two miles (as the crow flies) to the Table Mountain (Crug Hywel, Hywel's rock), an altitude of 1,481 feet, Crickhowell being only 300 feet above Ordnance datum.

On the Table Mountain there is an ancient Camp, commanding a magnificent view. The more active pedestrians may continue their walk for another two miles (as the crow flies) to the summit, Pen-Cerig-Calch (the top of the limestone rock), on the elevation of 2,301·5 feet, where the Old Red Sandstone is capped with Mountain Limestone of the Carboniferous series.

Should the weather be unfavourable for the above walks, there are to be found, as an alternative, other objects of local interest near Crickhowell, amongst which may be mentioned :—

(*a*) Glanusk Park, the residence of Lord Glanusk, in which is an Ogham inscribed stone, known as the Turpilian Stone, 2 miles west of Crickhowell, of which an account is to be found on page 73 of Professor J. O. Westwood's "Lapidarium Walliæ," with an illustration in fig. 5 on plate 41; in "Archæologia Cambrensis," 1871, page 158, and elsewhere; also in Jones' "History of Brecknockshire,' fig. 4, vol. ii., p. 433, plate 6.

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(*b*) The little-known Castle, the fortified mansion, and Roman inscribed stones at Tretower, 2½ miles in a north-westerly direction on the Talgarth road.

On Thursday, 11th June, despite the unfavourable outlook of the morning, which followed a night of heavy rainfall, a large company assembled in a special coach attached to the 9-15 a.m. train, and arrived at Abergavenny punctually at 10-8 a.m. No time was lost in securing seats in carriages from the Angel Hotel awaiting them at the Railway Station.

The drive of six miles in a north-westerly direction to Crickhowell was over a road more or less parallel with the left or northerly bank of the Usk, which river at the distance of three miles out of Abergavenny, forms for the length of one mile, where the road more nearly approaches the river, the boundary line between Monmouthshire and Breconshire. The river and the valley upon our left were, however, obscured from view owing to a dense fog, which, as the day progressed, assumed a remarkable inky aspect, and a condition of solidity as if it could be cut with a blunt sword: the blackness was as of a funereal shroud of ominous portent, and suggestive of such atmospheric disturbances as heralded the birth of Owen Glyndwr. It was just such a day as Robert Bloomfield experienced when, after leaving the banks of the River Wye, he left Abergavenny for Crickhowell :—

> "Heavy and low'ring, crowds on crowds,
> Drove adverse hosts of dark'ning clouds,
> Low o'er the vale, and far away,
> Deep gloom o'erspread the rising day.
> No morning beauties caught the eye,
> O'er mountain top, or stream, or sky."
> —BLOOMFIELD, "The Banks of Wye," Book III., line 259, &c.

On the right hand the view of the rising ground at the south-western base of Mynydd Pen-y-fal, the Sugar Loaf, was not so obscured, limited nevertheless to a few hundred yards.

We espied, about three miles from Abergavenny, in a plantation upon the left, the unusual growth of a healthy and fairly-sized box tree upon the summit of a full-grown larch tree.

Between three and four miles out of Abergavenny the county boundary is crossed, and Breconshire is entered in the parish of Llangenau. Between four and five miles from Abergavenny a lofty Maen-hir is visible over the wall of Cwrt-y-gollen upon the right. It stands in the park under a cluster of trees ; its dimensions are given as 13 feet in height, 3 feet 3 inches broad, and 1 foot 6 inches thick. Nothing certain is known of its history.

On approaching Crickhowell, a square tower on the left shows the ruined remains of the Castle, for the history and description of which our members are referred to Jones' History of Brecknockshire, with the caution that the names of Crickhowell and Tretower must be trans-

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posed in the second plate between pages 416 and 417 of the edition of 1898.* Further references will be found in *Mediæval Military Architecture*, by Geo. T. Clark, vol. 2, page 504.

Shortly after our arrival at Crickhowell, a small party of botanists, under the guidance of Rev. A. Ley, started for Craig Cilau at the limestone quarries of Llangattwg.

Owing to the persistent fog and otherwise threatening and unsettled state of the weather, the ascent to the Camp at Crug-Hywel, also known as the Table Mountain, with the prospect of extension of the walk further up the hill to Pen-cerig-calch, was abandoned. One striking feature about the Camp at Crug-Hywel (Hywel's Rock) is that a portion of the ditch has been cut through solid rock.

The abandonment of the visit to the top of Pen-cerig-calch was a sore disappointment to the geologists; it was, however, impracticable under the prevailing atmospheric condition and without a guide with local knowledge of the country. The name, signifying "the top of the limestone crag," comes as a surprise to the student of the local geology, where he finds the eastern heights of the Black Mountain range formed exclusively of Old Red Sandstone. Sir R. Murchison was led to ascend the heights attracted by the name.

He found, see page 320 of Symonds' "Records of the Rocks," this insulated outlier of Lower Limestone Shale and Carboniferous Limestone capped by nearly 200 feet (p. 365) of Millstone grit at the height of 2,301·5 feet above the sea, about five miles distant from the edge of the northern rim of the South Wales coalfield, separated therefrom by the denudation of the intervening valley of the Usk, the valley itself running along a line of fault which has upheaved the Old Red Sandstone hills of the Black Mountains, with Pen-cerig-calch on their summit, on the north bank of the river, and depressed the strata on the south.

"The distance from the northern mass of Llangmynech south of Oswestry must be about sixty miles, from Oreton and the Clee Hills on the north-east about forty miles, and from the Carboniferous Rocks of Dean Forest about twenty miles."

This presents an instructive lesson, and one often brought forward by demonstrators of our local geology, of former dislocations of the earth's crust, of the startling results of denudation of past measureless ages, and of the creation of mountain scenery.

Whilst treating of geology, we take the opportunity of calling the attention of our members to the recently published "New Memoirs of the Geological Society," treating of the geology of the South Wales Coalfield, Part II., of the country around Abergavenny, being an

* The date of the first edition of "History of Brecknockshire," by Theophilus Jones, is 1803. Our references are to the edition published in 1898.

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account of the region comprised in Sheet 232 of the Ordnance Survey Map, by Aubrey Strahan, F.G.S., and Walcot Gibson, F.G.S., published 1900, price 2s. On page 15 we read :—

"On the Sugar Loaf and again north of Crickhowel, the upper part of the series consists of soft friable red grits easily weathering into sand and clay. Over these beds there comes a massive grey grit which forms the summit of the Sugar Loaf and the Table Mountain. In the latter hill this rock contains many quartz-pebbles, and precisely resembles Millstone grit in appearance."

On page 7 a section is given from Abergavenny northwards through the Sugar Loaf where this elevation (a Trigonometrical Station 1,955 feet high) is shown capped with grey grit overlying quartz conglomerate (equivalent to Millstone grit) upon Old Red Sandstone.

Further observations are given as follows upon page 19.

"The Carboniferous Limestone exhibits in a marked degree, within the limits of the area under description (Sheet 232) a change which is noticeable in all the members of the Carboniferous system. From a thickness of upwards of 500 feet in the western part, it dwindles to scarcely more than 100 feet in the eastern part of the area, at the same time that it almost entirely loses the massive character which gives the escarpment its characteristic features, and becomes an inconspicuous group of shales with little more than thin slabs of muddy limestone. It reaches its *minimum* near the north-east corner of the Carboniferous basin, for it expands not only westwards but less rapidly southwards also."

"It is a significant fact that the attenuation is no less marked in the outlier of Pen-cerig-calch, north of Crickhowel and just outside the limits of Sheet 232,* than it is in the extreme north-east corner of the Coalfield, for it suggests that there may be some connection in shape between the present Carboniferous basin and the area of subsidence in which the maximum development of the Carboniferous rocks took place. It will be remembered that the Limestone develops again still further east in the Forest of Dean, but that we have no evidence of its having attained any great thickness in a northerly or north-easterly direction, through Herefordshire, Worcestershire, and Shropshire. On the contrary there is proof that it never was deposited over parts of those counties, and that that region was not submerged until a late stage in the Carboniferous epoch. In Pembrokeshire also the limestone is overlapped northwards by the Coal Measures."†

Crickhowell Church was visited under the guidance of our friend the Rev. T. P. Powell, who was temporarily residing at Crickhowell. It contains a tomb to the family of Pauncefoot; a sketch of a knight of this family is given on Plate X., facing page 206, of Jones's

* See Sheet 214, Geological Survey Map.
† On this subject see De la Beche, "Memoirs of Geological Survey," Vol. I., pp. 112, 131, 132.

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"Brecknockshire," edition of 1898, and a description given on page 383. There is also a large monument of black and white marble, with alabaster effigies, to Sir John Herbert, of Dan-y-Castle, and his wife, Joan.

Mr. Powell conducted the party to the grounds of Porth Mawr, which were entered through a picturesque gateway of late Perpendicular period. Formerly it led to an ancient residence of the Herberts.

Seats in the carriages having been resumed, the drive was extended in a north-westerly direction from Crickhowell along the Talgarth road, for a distance of three miles, to Tretower vicarage, where, by appointment, the Vicar, Rev. John Owen Evans, met us and kindly undertook the office of director to the inscribed stones, the Castle, the Court, and the Church.

INSCRIBED STONES.

The inscribed stones at Tretower are two in number, known respectively as the "Valens" stone and the "Peregrine" stone.

THE VALENS STONE.

The "Valens" stone forms one of the stones built into the right-hand pillar of the entrance gate to the vicarage. The inscription VALENT can be deciphered, roughly cut and upside down, upon the inner aspect of the pillar, at the height of about four feet from the ground. It is evident that the stone has been brought from elsewhere.

This portion of the island was pacified long before the advent of the later Emperors Valentinian and Valens, who date from A.D. 363 to 365, Valentinian II., A.D. 378, and Valentinian III., A.D. 425, whose warlike operations were chiefly conducted against the raids of Saxons, Picts, and Scots, and in memory of one or other of whom the southern part of Scotland was named Valentia. We see no reason to associate either of them with this locality.

We find, however, mention of one Manlius Valens in an earlier period of Romano-British History in connection with this country of the Silures. In the time of the Emperor Claudius, A.D. 41 to 55, Aulus Plautius received in A.D. 47 an ovation in Rome for his successes in Britain after the nearly fatal efforts of Vespasian, who was only saved by the heroism of his son Titus. At this period Caratacus (Caractacus)* was not yet subdued.

In A.D. 50 Britain was made an "Imperial" province, and Publius Ostorius Scapula was sent as Pro-prætor; the Iceni† in the east were crushed, a colony was formed at Camolodunum‡ (Colchester), central Britain submitted or declined to resist with arms, the territories

* The original name Caractacus, appearing also as Caractac, Caradog, &c., is more familiar to us under the spelling—Caractacus.

† The Iceni inhabited Norfolk, Suffolk, Cambridgeshire, and Huntingdonshire.

‡ Variable spellings exist:—Camalodunum, Camelodunum, Camolodunum, Camulodunum.

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of the Cangi* had been wasted, and the whole energies of Ostorius were directed to extinguishing the very name of the resolute Silures† under Caractacus, the only heir of Cymbeline after the death of his brother Togodumnus in a battle against Aulus Plautius.

In A.D. 53, Caractacus, after nine years of stubborn resistance, was taken prisoner owing to the treachery of Cartismandua, queen of the Brigantes ‡ in the north, amongst whom he had taken refuge. See Tacitus, *Annals*, Book xii., 31-40.

In A.D. 54, Ostorius died, but before his death strong posts had been established as far north as Uriconium, and the subjugation of the Silures was announced by his immediate successor, Avitus Didius Gallus, otherwise named Aulus Didius, but not before a successful expedition against the Silures, who were making reprisals in all quarters, and who had recently cut off two auxiliary cohorts and defeated the legion commanded by Manlius Valens.

Tacitus in his Annals, Lib. xii, cap. 40, for convenience sake, connects the transactions under the two Pro-prætors Ostorius and Didius, and informs us that Didius, oppressed with the weight of years, was content to act by his lieutenants. The date of the defeat of Manlius Valens may be put down to between A.D. 54 and the death of Claudius in A.D. 55.

It is well to leave the inscribed stone Valens alone, rather than submit what can only be conjecture as to its association with the defeated commander Manlius Valens.

THE PEREGRINUS STONE.

The "Peregrinus" stone is a stone built low down into the north-east angle of the front wall of Ty-llys House, and bears the inscription, PERIGRINI FEC. First impressions lead to the suspicion that some wag of a Bill Stumps has left his mark here. It is a stumbling block of the antiquary. The name is a stranger to us, and we are content to pronounce it the mark of a foreigner.

There is no local tradition connected with these stones beyond that they are believed to have been brought from the Gaer Camp, about two miles westward of Tretower. Jones, in his *History of Breconshire*, edition of 1898, page 416, states that Roman coins have been dug up here, and that a considerable amount of labour has been expended in raising the camp, especially on the north and east sides: a plan of the camp is exhibited on plate xiii., facing page 254.

* The Cangi inhabited Cheshire and part of Lancashire.

† The Silures occupied Herefordshire, Radnorshire, Breconshire, Monmouthshire, and Glamorganshire. Tacitus, in his Annales Lib., xii. cap. 33, describes them as "a people resolute and fierce by nature."

‡ The Brigantes inhabited Yorkshire, Durham, Cumberland, and Westmoreland.

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OTHER MEMORIAL STONES IN THE NEIGHBOURHOOD.

A stone in the wall outside the church of Cwmdu has been noticed by one of the editors of Camden, and a plate given. We have no record of where it may be at the present period, but Jones in his *History of Brecknockshire*, edition of 1898, page 416, writes:—"It is now *thrown down in a field about half a mile from Tretower, on which is the following Barbaro-British-Latin inscriptions, in most uncouth characters—

CATACUS HIC JACT FILIUS TESERHACUS."†

The stone is represented upon Plate xii., figure 1, facing page 246.

On page 433 he records a cylindrical stone, about three feet and a half high, about half a mile eastward of Scethrog, commemorating the interment of a son of Victorinus, "on the right hand side of the road leading from Brecon," of which a drawing is given on Plate vi., fig. 3, facing page 60.

Between Penmyarth House and the river Usk is a Maenhîr as high as the one in Cwrt-y-gollen Park, namely, 12 to 13 feet high. *Jones' Brecknockshire*, edition of 1898, page 417, last paragraph.

In *Archæologia Cambrensis* for January, 1903, Professor Anwyl in a paper entitled "The Early Settlers of Brecon," records in what he calls the Usk Valley Zone the following megalithic monuments in succession advancing from the Monmouthshire boundary:—(1) The Maen Hir of Cwrt y Gollen [which we saw this morning]; (2) The Glan Usk Cromlech; (3) a Maen Hir near Llangynidr Bridge; (4) a Maen Hir near Tretower; (5) a Maen Hir near Gileston; (6) the Ty Illtyd Cromlech; (7) a Maen Hir near the latter; (8) a Maen Hir near Cradoc Station; (9) a Maen Hir a little south of Battle; and (10) after a considerable interval, a stone-circle on Mynydd Trecastell. He adds:—"Assuming that some of these, at any rate, belong to pre-Celtic times, they suggest the existence of a flourishing community contemporaneous with them in the fertile Usk Valley."

TRETOWER CASTLE.

By what power
Rose the strong walls of old Tre Tower?
Deep in the valley, whose clear rill
Then stole through wilds, and wanders still
Through village shades, unstain'd with gore,
Where war-steeds bathe their hoofs no more.
Empires have fallen, armies bled,
Since yon old wall, with upright head,
Met the loud tempest; who can trace
When first the rude mass, from its base,
Stoop'd in that dreadful form?
Bloomfield, "The Banks of Wye."—Book III., lines 335, *et seq.*

Tretower Castle was next visited. The plan of the *enceinte* is peculiar and assumes a somewhat three cornered form, with remnants

* The date of publication of First Edition is 1803.
† Others make it TEGERNACUS, and suppose it to be the tombstone of Catwg the Wise.

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of circular towers at its northern and southern angles, or the ends of its base, and a keep at its apex or western angle. This keep is rectangular with indications of Norman zigzag work; it has been gutted, and an Early English round tower has been enclosed within it; this is a very unusual, perhaps solitary example of such a modification. In the second plate between pages 416 and 417 of Jones' *History of Brecknockshire*, edition of 1898, we believe there are two errors—namely, the one before referred to, the transposition of Crickhowell for Tretower, and secondly, the artist of the survey in the beginning of the 16th century has enclosed a circular tower surrounded by another circular tower; we find the outer tower undoubtedly rectangular.

Again from the surroundings of the morass we are inclined to believe that the ruined tower printed as Crickhowell on the plate facing page 384 is an error and should be transposed for Tretower.

For the ground plan of the keep, and adjacent fortifications, with massive walls, 11 feet 6 inches thick, ; also an elevation of the Castle, facing page 500; see "Mediæval Military Architecture," Vol. II., by Geo. T. Clark.

On page 418 of Jones' *History of Brecknockshire*, reprinted in 1898, we read that Tretower was the residence of Drymbenog, brother of Bleddin ap Maenarch, ancestor of the Vaughan family. In the time of Glendower it was ordered to be fortified, and Sir Richard Berkeley was appointed governor by Henry IV., about 1403. From page 87 we learn that, during the reign of Edward IV. (1461-1483) Sir William Herbert, the first Earl of Pembroke, had a grant of the lordship of Crickhowell and Tretower, which, upon the marriage of the granddaughter Elizabeth with Charles, Earl of Worcester, became the property of that family, and afterwards of the Dukes of Beaufort.

TRETOWER COURT.

Tretower Court, a singularly interesting mediæval building, immediately adjoining the Castle area, and now occupied as farm buildings, was next visited, and descriptive notes, chiefly collected from Parker's *Mediæval Mansions*, were given by the Vicar, as follows :—

Tretower Court is a good manor house of the Decorated Style of the time of Edward III. (1327-1362). Some alterations of the Elizabethan period (1558-1601) have been inserted. The house was a *domus defensibilis*, and appears to have been built as a residence in lieu of the adjoining Castle.

The entrance gate has a good machicolation above, with three openings for missiles, or for pouring down water upon any faggots which might be piled against the wooden door with the object of setting it on fire. There is no indication of any portcullis. On the top of the wall is the allure, or walk, defended by a loopholed parapet wall, leading to a chamber which was probably a guard-room. It appears that the wall

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was originally open to the sky, and that it was afterwards raised to carry a roof, and that enlarged windows of a later date were substituted for the former loopholes.

INNER COURT.—On entering, on the left are the stables, and over them the servants' apartments. Alterations of the Elizabethan period are seen in the windows.

The hall is a fine large building, in a good state of preservation, with the old timber roof of the period. At one end there are the remains of a beam of the music gallery, with the remains of pegs for hanging tapestry. The usual doors of the buttery, kitchen, and pantry under it are destroyed, and a rough stone wall has been built up to support the beam with the wooden chambers made above.

At the other end, the north end, is the site for the lord. It is divided into two storeys, called the Cellar and the Solar, which afterwards became the drawing and dining rooms.

Connected with the lord's chambers is a series of bedrooms with an open passage in front, and under the bedrooms are the storerooms.

Tretower has been described as the fair place of Henry Veliau. The first Vaughan of Tretower was son of Roger Vaughan, of Bredwardine, who, with Sir David Gam, was knighted at Agincourt, 1415. At one period it was the castellated mansion of the family of Pichard or Pychard. From this family we derive the parish of Ocle Pychard, midway between Hereford and Bromyard.

St. John's Church at Tretower, a new building, of Early English architecture, built upon the site of a previous structure, was inspected.

The Chapelry of Tretower is mentioned in a document in the Bodleian, dated 1234. It may have been attached to the Castle, and afterwards considered a private Oratory of the Vaughan family. It is uncertain by whom it was founded.

ROMAN ROADS AND THE SO-CALLED JULIAN ROAD IN THE NEIGHBOURHOOD.

The Vicar of Tretower informed us that we were near the Julian Road to Carmarthen. This information is probably based upon the following extract from page 417 of Jones' "Brecknockshire," edition of 1898 :—"Close to this station [the Gaer, previously referred to], on the south, passed the Via Julia, from Isca Legionum [Caerleon] to Muridunum* [Carmarthen], and soon afterwards, as I once conceived, from the general opinion of the country, it crossed the brook, made an angle at Llygadyw, and proceeded up the old road to Bwlch. I am, however, now satisfied, not only from my own observation, but from the indefatigable researches of a friend, that it went in a line to Gaer, and from thence straight along a road now called Heol ddu to the top of Bwlch,

* Or, more properly, Maridunum of Antonine's Itinerary. Edit.

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by which the ascent was eased, and the distance rendered much shorter than if it followed what I supposed to have been the vestiges of an old Roman road."

Neither Ptolemy, nor the Ravenna Geographer, nor the *Antonine Itinerary* treat of Roman roads in this neighbourhood. The nearest stations given are Bravinium, Magna, and Ariconium on the Herefordshire side, and Burrium, Blestium, Bovium, Gobannium, Nidum, in Monmouthshire and South Wales.

Authorities of the present day on the subject of Roman roads are content with limiting the Julia Via or the Julia Strata to parts east of the river Severn, no further west than Caerleon, but it will be well to consider what earlier authorities have advanced upon the subject.

On page 89 of *Iter Britanniarum*, or *that part of the Itinerary of Antoninus which relates to Britain*, by Thomas Reynolds, dated 1799, we read: "The sixth and last road to be described is the Julian Street. The name of this street has been preserved by one of our poets, by whom it is described as passing the river Usk at Newport, in Monmouthshire. So Camden informs us, and he conjectures that it may have received its name from Julius Frontinus, who conquered the Silures." The date of Camden's *Britannia* is 1587; the title "Julian" has thus the support of some antiquity. In continuation of the same page, 89, we read that "Richard of Cirencester has supposed the name to extend beyond Newport, where Necham has mentioned it," and, in a footnote, the following extract is given from General Roy's *Milit. Antiq*, Book IV., c. ii.: "From the Severn a Roman road, called by Richard the Julian Way, leads along the lower parts of Monmouthshire and Glamorganshire, and is found continued as far as St. David's, in Pembrokeshire. On this road several pedestals (supposed of Roman milestones) may be observed, particularly on Stalling Down, eastward of Cowbridge, and again westward from that town; the same road in passing over a height is called the Golden Mile, and there is a cross raised on steps, the pedestal and shaft of which seem to be of the same kind. On Newton Down the vestiges of the Roman way are very visible."

Again, on page 92 of Reynolds' *Iter Britanniarum*, mention is made of "a branch of Julian Street across South and North Wales to Chester, passing through the Roman towns of the Gaer, near Brecon, and Caer Sws near Newtown, and not far from Meifod, forming a regular line of communication through this part of the island."

Although we can find neither record of the places where Julius Frontinus, the Pro-prætor, fought his battles, nor the particulars of his campaigns, we learn that he was long occupied in repairing the forts erected by Ostorius Scapula which had been ruined, that he had with him the 2nd legion of Augustus called Victrix, and that before he had succeeded in subjugating the fierce and warlike Silures, the country must

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have been well traversed and overrun before the year A.D. 75, and in the interval since Ostorius had, before his death in A.D. 54, established military posts so far distant as Venta Silurum (Caerleon) and Uriconium (Wroxeter).

From the excavations recently carried out, 1900 to 1902, the results of which have been published by the Cardiff Naturalists' Society, Vol. xxxv., 1903, under the title of *The Gellygaer excavations*, at the Camp of Gellygaer, only a day's march of 18 miles southwards from Crickhowell, we are convinced that it was of Roman construction, of early date, and probably abandoned shortly after A.D. 98. From the ancient historian Tacitus, we may safely surmise that shortly after this period, or at least A.D. 120, this portion of the island was sufficiently subjugated and peaceful, as to admit the withdrawal or the reduction of this and other local garrisons, for, later on, in the second and third centuries, we find "vexillations" of the Second Legion Augusta at Caerleon were detached for service in the extreme north in the building of the Roman wall. "Out of seven coins found two were Republican denarii, to which the dates respectively of B.C. 120 and B.C. 92 have been assigned by Mr. H. A. Grueber, F.S.A., of the British Museum. *The others were of Vespasian A.D. 69 to 79, of Domitian A.D. 81 to 96, and of Nerva A.D. 96 to 98." (The Gellygaer Excavations. Cardiff Naturalists' Society, Vol. xxxv., page 97). Gellygaer is to be found on sheet 249, of the Ordnance Survey Maps, on the scale of 1 inch to one mile.

Peace and the supreme control of the country could not be maintained, nor guerilla warfare be terminated without the command of all trackways and lines of communications between the various posts. Recently in South Africa the system of small Blockhouses tenanted by a small garrison was adopted. Roman camps or gaers within easy reach of each other are found scattered over this district. The smaller camps, say from three to eight acres each, would probably be garrisoned mainly by auxiliaries recruited from subjects, not citizens, of the Empire. Such auxiliaries would be composed of regiments of infantry (cohortes) from 500 to 1,000 strong, and of cavalry (alæ). The legions recruited principally from trustworthy citizens, composed of brigades of heavy infantry, and amounting to a strength of 5,000 men, occupied the most important posts and larger camps, covering an area sometimes of 50 acres.

From Abergavenny to Brecon is about 22 miles. The Pen-y-gaer Camp near Tretower in the valley of Cwmddu, and close to the modern Half-way Inn, occupies a convenient post midway between the two stations.

* In a footnote on page 92, Mr. Haverfield writes :—"Roman coins minted previous to the foundation of the Roman Empire (B.C. 27) are not uncommon among remains of Imperial date. They occur, for instance, in numerous hoards, of which the latest coins belong to the third century. Various reasons seem to have contributed to the survival of these coins in use. Some, like Antony's legionary *denarii*, probably remained in use because they were rather heavily alloyed, in accordance with Gresham's law. Others, and among these we may class the Gellygaer specimens, may have reached Britain by way of trade, at an early date, and remained in circulation there They are the *serrati bigatique*, which a writer, contemporary with the occupation of Gellygaer, mentions as preferred by the natives in Germany even in his own day."

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In fact a chain of forts may be traced along the valley of the Usk, extending from Caerleon through Usk, Abergavenny, Gaer in Cwm-dû, Gaer Camp near Brecon, Llywel, Bwlch, and Llandovery to Ogofan, where gold is said to have been extensively worked in Roman times. (See the footnote on page 157 of the recently published work "Our Roman Highways," by Forbes and Burmester. See also Poole's "History of Brecon," pp. 122-124).

The annals of Tacitus are continued by him in the Life of Cnæus Julius Agricola, his father-in-law, from which we learn that such was the tranquillity following the conquests of Agricola about A.D. 78 over the Ordovices, immediately north of the Silures reaching to the sea, and to Mona (Anglesea), that he advanced northwards into Caledonia, built a rampart extending from the Forth to the Clyde, and inaugurated in Britain that unique phenomenon in those days of a Pax Romana.

To the period following the departure of Agricola in A.D. 84 must be attributed the development under Roman civilization of the network of roads throughout the island elaborately constructed, metalled, and otherwise exhibiting skilful engineering abilities, as well as prudent features of administration.

Vestiges of ancient roads are frequent in Breconshire and the neighbouring counties. Fragments are marked on their maps by the authorities of the Ordnance, and there are many which have lapsed into disuse and remain buried a few feet under the soil. In Herefordshire we have recently witnessed two such revelations of buried roads; one leading from the river Wye, opposite the termination of Stone Street in the parish of Eaton Bishop, over a field thence through the grounds of the Old Weir to Kenchester. See *Transactions*, 1893, page 60. Another in the grounds of the railway station at Abbeydore. See *Transactions*, 1901, page 190.

Sheet 232 of the Ordnance Survey Maps shows, in the extreme southwest corner, a branch marked Roman road over Geligaer Common. This road is in the line of communications northwards from Cardiff and Llandaff, by Caerphilly; proceeding further north its course lies east of the Brecon and Merthyr railway, in the north western corner of the map; a prolongation of this road would cut the Roman road marked on sheet 214 from Pen-y-gaer through Bwlch to Llansaintfraed, concerning which we read on page 366 of "Roman Roads of Britain," by T. Codrington, recently published (1903) by the Society for Promoting Christian Knowledge:—"This road was joined near Brecon by a Roman road from Abergavenny, of which, however, there is little trace. To the west of Crickhowell the course seems to be by Tretower to Pen-y-gaer, where there are the remains of a Roman camp, and along a lane to Ty-mawr, about half-a-mile west of which at Bwlch a parish boundary joins the main road, and follows it for half-a-mile, and continues along a lane for a mile, to the southward of Allt-yr-Yscrin. A stone pillar, probably a milliary, dedicated to Victorinus (A.D. 265-7) formerly stood by the side

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of the road at Scethrog, * and seems to show that the present road follows the course of the Roman road on the west of the Brecon and Merthyr railway."

The subject of Roman roads in Britain presents a large field of study, and requires examination and discussion under a commission of experts. Students are grateful to Mr. T. Codrington for this long and much wanted contribution to our literature on the subject, in so convenient and portable a form; its value is much enhanced by the large accompanying chart on the scale of 20 miles to one inch.

Connected with the neighbourhood under consideration there is marked upon Mr. Codrington's map a circuitous route starting from Isca Silurum (Caerleon), by Usk (Burrium), Abergavenny (Gobannium), along the northern or left bank of the river Usk, through Brecknock to Aberyscir, thence southwards by the road called Sarn Helen† to Neath. From Neath (Nidum) the road is continued along the southern Glamorganshire coast to Llandaff, near Cardiff, thence completing the circle to Caerleon, our starting point.

This circuitous route has an average diameter of nearly 40 miles. The previously recorded fragments of Roman road on Sheets 214 and 232 of the Ordnance Survey come within this circle. The position of Gellygaer is intermediate between Llandaff and Crickhowell, whilst Caerphilly lies between Gellygaer and Caerleon. There are also fragments of other roads of communication transversely upon the Ordnance Maps. Gellygaer would be about a day's march from Caerleon on the south and Crickhowell on the north.

Other roads outside the circle of 40 miles diameter are:— Commencing from the south; (1) From Isca Silurum (Caerleon) through Venta Silurum (Caerwent), thence across the river Severn to meet the Foss Way at Aquæ Solis (Bath). (2) The branch from Caerwent by the Julia Strata to Glevum (Gloucester). (3) From Burrium (Usk) to Blestium (Monmouth), not well defined, and part of Iter XIII. of Antoninus. (4) From Gobannium (Abergavenny) to Magnæ (Kenchester), part of Iter XII. of Antoninus. (5) From Brecknock to Magnæ. (6) A short line of connection running north-west from Brecknock, west of the Honddu River into the next following road (number seven). (7) An important road running north from Aberyscir, crossing the rivers Honddu and Yrfon through Builth, Castell Lechryd, Castell Collen,‡ and, after crossing the river Ithon, and, six miles further north, one of its tributaries, the Clywedog, near the ruins of Abbey Cwm Hir,

* It was removed and in use as a garden roller for some time, and again set up on the road side.

† This Sarn Helen must not be confounded with the important and long Sarn Helen road about thirty miles westwards, which starts from Carmarthen (Maridunum), running more or less parallel with the Cardiganshire Coast, at an average distance from it of about twelve miles, crossing the rivers Teifi, near Lampeter, Ystwith, Dovey, and Conway to Caer Hun (Conovium).

‡ Castell Collen is two miles north of Llandrindod Common, a large square camp here, on the right bank of the river Ithon, and seems to correspond with Cwm in the map of Reynolds' *Iter Britanniarum*, near the boundary line between the territories of the Silures and the Ordovices. It is impossible to determine this boundary with any approach to accuracy, as it has not been given by our ancient geographers or historians.

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to Caersws, near Moat Lane Junction, on the London and North-Western Railway, thence towards the site now occupied by the reservoir for the Liverpool water supply from the river Vyrnwy, west of Meifod. (8) Finally, a road westwards from Aberyscir through Llandovery to meet the important western road of Sarn Helen, north of Lampeter, cutting *en route* a road from Castell Llechryd to Carmarthen.

Mr. Codrington makes no reference to the road described as the Julian Street on page 89 of Reynolds' *Iter*, leading from Newport on the Usk to St. David's in Pembrokeshire, and marked in Reynolds' map as a Julian Street leading from St. David's eastwards to no further than the mouth of the river Towy.

He does give a tracing of a *supposed* course of a doubtful Roman road from Carmarthen to St. David's.

He states, on page 347, that there are no evidences of a Roman road between Carmarthen and Neath. In the same paragraph he refers to the extraordinary confusion which has arisen, possibly owing to the errors of early transcribers, from the fact of the first eight lines of Iter XII. of Antoninus corresponding to those of Iter XV., for the explanation of which readers are referred to page 346 of his book.

FURTHER NOTES ON ROMAN ROADS IN THE DISTRICT.

Since writing the above the quarterly number for January, 1903, of "Archæologia Cambrensis" has been published. From page 70 we give the following extracts from the address of Lord Glanusk, delivered on 19th August, 1902, in the Parish Hall, Brecon, as President of the Cambrian Association.

ITER XII.

See Arch. Camb., January, 1903—page 70.

ITER XII.—From Caerleon the coast road ran through Cardiff and Neath to Maridunum (Caermarthen). From Maridunum an important vicinal road follows the Towy River to Llandilo. whence it is shown on the Ordnance Map following the modern road from Swansea to Llandovery, from which place it runs still northward into North Wales.

At or near Llandovery it was joined by another road—Via Julia Montana. This led east and west through the whole length of the Vale of Usk, from the source of the river, past Brecon, to Abergavenny. It connected the Camp at Caerbannau with Caermarthen and Abergavenny.

CARDIFF TO CAERBANNAU.—To approach the Brecon Camp from the Channel is a road which, starting from Cardiff, follows the course of the Taff River northwards. It bifurcates at a point called Dollygaer (the Camp Meadow), south of Pont Twyn Reservoir. The western road follows Taff Fechan in a north-westerly direction; it probably passed west of the Beacon, down the Tarell Brook, to Caerbannau.

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The eastern road can still be traced. Crossing Glyn Colwyn above, and to the east of the Brecon and Merthyr Railway, it keeps to the top of the hill, finally descending to Talybont, near which place it probably joined the Via Julia Montana, already described, and may have been intended as a short route to Abergavenny.

NEATH TO CHESTER.—The last road to be described is the Sarn Helen, or Sarn Lleon, "the Road of the Legion," connecting Neath with Chester, the Camp of the Legion, from which perhaps the road takes its name.

From Neath the road leads along the ridge of Hir Fynydd (the long mountain). It can be traced in places through Blaensenny, at a spot a mile south of Penpont, and occasionally until it arrives at a camp near Brecon.

After passing the Gaer, the route leads to Brecon, and can then be traced northwards up the valley of the Honddu. A mile above Lower Chapel it leaves the modern road to Builth, and ascends the mountain, rejoining the road at the summit of the Eppynt, by a mountain inn, Cwm Awen. It follows the Dihonew Brook to Maesmynis, thence probably to Builth, crossing the Wye, and so to Llanyre, in Radnorshire, where there is a camp, from which the road passes again to the north, its objective being probably Wroxeter.

Caerbannau will be seen to be a spot of considerable importance, the junction of most of the military routes, and very favourable for a camp of permanent occupation. It was constructed to contain 1,500 men.

We must now return to the transactions of the day.

By mid-day the veil of black fog, which had been suspended over the valley in the earlier hours of the day, was rent, and converted into a light mist; the prevailing gloom was gradually growing less opaque.

Leaving Tretower the return drive was conducted over the Rhiangoll, a tributary of the Usk, into and along the Brecon Road for half-a-mile, skirting Penmyarth Park, over the river Usk by Glanusk Bridge, through Glanusk Park, along a charming drive fully one mile in length, thence over a mile of good road along the right bank and southerly side of the Usk to the appointed *rendezvous* at the southern extremity of the long bridge over the Usk at Crickhowell. The Usk forms a bent-bow boundary on the north and east of Glanusk Park, and on leaving the Park makes a striking right-angle bend.

PLACE-NAME—USK.

With reference to the name Usk, which in modern Welsh bears the form Wysg, and in *Liber Landavensis* the Welsh forms of Uisc, Huisc, Usc, and Husc, in a paper "The Early Settlers of Brecon," by Professor Anwyl in *Archæologia Cambrensis* for January, 1903, page

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28, he writes : "It may be that the name Wysg is equivalent to the Irish Uisge, *water*, and that it indicates the ancient Goidelic character of the district. It should be noted, however, that the classical forms of the name Ισκα in Greek and Isca in Latin, are identical with the name of the Exe, known as Isca Damnoniorum. In the form Isca the name also occurred (according to Holder in his Altceltische Sprachschatz, s.v.) on the Continent as that of a stream above Löwen, and as the ancient name of the Isch in Saargau. Hence it is not impossible, after all, that the name Usk is a very ancient pre-Celtic river-name."

Lord Glanusk was absent from home ; the limit of time at disposal and the eagerness of members to push onwards and see the Turpilian stone prevented our inspection, by invitation, of the gardens.

THE TURPILIAN STONE.

The Turpilian stone was at one time used as a footstone across a ditch on the farm of Sir Joseph Bailey called Wern y Butler, adjoining the farm of Ty-yn-y-wlâd.

An inscription in Ogham characters, much worn and defaced, is still traceable upon the stone In the Gentleman's Magazine for July, 1768, the writer interprets it as :—

TVRPILIVS IACIT

VERI TR FILIVS DVNOCATI.

References to the Turpilian stone will be found as follows :—

"Lapidarium Walliæ," page 73, by Professor J. O. Westwood, 1876-1879. Printed for the Cambrian Archæological Association at the University Press, Oxford—with an illustration on a large scale on plate 41, fig. 5.

"Archæologia Cambrensis," 1847, page 25, with the true reading by Professor Westwood ; 1869, page 153, where Mr. Brash proves the marks to be Oghams ; 1871, page 158 ; 1874, page 19, and elsewhere.

"History of Breconshire," by Jones. Vol. ii., page 433—with illustrations on plate 6, fig. 4.

"Ogham Inscriptions in Ireland, Wales, and Scotland," by Sir Samuel Ferguson (Edinburgh : David Douglas, 1887), on page 114.

"Gibson's Camden," II., page 433, plate 14, fig. 6.

"Gough's Camden," II., page 476, in which this stone is described, then thrown down near a hedge on the farm of Ty-yn-y-wlâd, about a mile to the north-east of Crickhowell. Again in Ed. II. Vol. III., 103, tab. 4, fig. 6.

It is also mentioned or figured by Strange in Archæologia, Vol. ii., plate 2, fig 2, and page 19.

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In 1846, Professor Westwood found the stone on the farm of Wern-y-Butler, whither it had been removed from its former position in an adjoining field, on the farm of Ty-yn-y-wlâd. Its dimensions were nearly 3 yards long, 14 inches wide at one end, and 2 feet wide in the middle. At that period the inscription was read without the slightest difficulty as to any of the letters.

TURPILLI IC IACIT

PUUERI TRILUNI DUNOCATI.

The stone was removed to Glanusk Park by the proprietor, Lord Glanusk, to its present position in the midst of a small clump of trees, about three furlongs to the east of the house, where it was visited in 1872 by the members of the Cambrian Archæological Association, at the Brecon Meeting; and again, in 1876, at the Abergavenny Meeting.

The whole of the inscription, wrote Prof. Westwood, is written in tolerably good Roman Capitals, with the exception of the *d* in the second line, which is of the minuscule form, and the long-tailed *p's*.

The word *puueri*, used instead of *filii*, is a most unusual formula.

Professor Westwood gives a reference to Hübner, Ins. Christ., Brit., page 15, No. 34, on Professor Rhys' suggestion that the word *puueri* should be read *puveri*, a linguistic modification of pueri ("The Inscribed Stones of Wales," p. 11, 1873), where the other words of this inscription are commented on.

In Arch. Camb., 1871, page 158, Mr. Brash adds, with reference to the name DVNOCATI, that "the word NOCATI occurs on an Ogham Stone found at Whitefield, Co. Kerry, now in the Museum of the Royal Irish Academy, the prefix DV wanting on the Irish stone being usual before Gaedhelic names as in Dunan, Duinneachaidh, which last he affirms is the Dunocat of the Welsh monument, and must be so pronounced. On the other hand, Prof. Rhys asserts that the word Dunocati becomes Dincat in the Liber Landavensis, pp. 194, 217." (Lapidarium Walliæ, page 74).

With reference to the TURPIL Stone, Sir Samuel Ferguson writes, in his "Ogham Inscriptions in England, Wales, and Scotland," 1887, in para. 188, on page 114, as follows:—

"The same *may be said of the Usk Park inscription, Crickhowell, Breconshire. It is conceived in a Latin taste quite different from the crude Christian Oghamic formula—

Turpili ic iacit pueri triluni dunocati,

echoed in part by the Ogham, which employs χ for the exceptional *p*, *Turpili*, and after a long lacuna two *n's*. I take "*triluni*" to have

*"The same may be said," &c. These words follow the remarks on previous paragraphs, e.g. in para. 187, "These contexts vary in their style of writing from well-shaped Roman capitals to mixed capitals and minuscules of the most corrupt forms. The comparative age of the monuments has usually been estimated as proportionate to the less or greater rudeness of the lettering."

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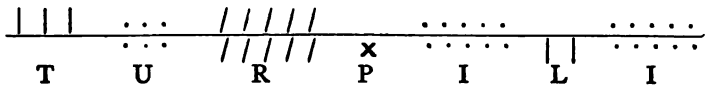
reference to the child's life of three months. If a proper name, the epigraph would lose something of its Latin aspect, but the *p* in Turpill and the "pueri" would still distinguish it from the other biliterals of what may be called mere British origin, and point to a dominant Roman influence in the composition. Nevertheless, it is to be observed that *Turpill* is put in the genitive, as in the Irish example, though, perhaps, the following *ic iacit* may be meant to be taken in the concrete, corresponding to a supposed *lapis* or *titulus*."

The inscription occupies a length of two feet four inches, and is broadly and deeply cut in characters of the exact type of the Irish Ogham letters, which are formed by straight or slanting strokes drawn above, or beneath, or right through horizontal or vertical lines, as follows:—



There is another and very well preserved Ogham Stone at Trallong (Trallwng), nearer Brecon. It was visited by the Cambrian Archæological Society on the 19th August, 1902.

Ogham inscriptions are scattered over Scotland, Wales, and the South-West of England, but the majority occur in Ireland.

On pages 225, 226, of *The Story of the Alphabet*, by Edward Clodd (George Newnes, 1900), we read that "the Ogam* alphabet, which may date from the 5th century, A.D., the use of which did not extend outside the British Isles, is held by some scholars to be derived from the Runic," and that Professor Rhys regards the Ogams as "probably the work of a grammarian acquainted with Roman writing, but too proud to adopt it."

Clodd writes:—The alphabet is divided into four aicmes or groups, each containing five letters. The first aicme, B, L, F, S, N, being placed under the line (assuming this to be horizontal).

The second aicme, H, D, T, C, Qu, above the line.

The third aicme M, G, Ng, F (?), R, diagonally through the line.

The fourth aicme, comprising the vowels A, O, U, E, I, intersecting the line at right angles.

A few remarks on Ogam characters are to be found in *Encyclopædia Britannica*, 9th edition, 1889, page 306, under the heading "Celtic Literature," intimating that the character of many Ogam inscribed monuments, and the circumstances under which they are usually found, seem to favour their pre-Christian use, but on this point there is still much uncertainty. The writing was certainly practised as late as the 9th and 10th centuries.

* "Ogham" is spelled "Ogam" by this and other authorities.

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With respect to the inscriptions, Professor E. Anwyl writes, on page 36 of his articles, "The Early Settlers in Brecon," in Archæologia Cambrensis, January, 1903: "In discussing the ethnology of Breconshire, the writer has not found it possible, within the limits of this paper, to enter at all fully into the difficult question of the Ogam inscriptions.

"The discovery of an Ogam inscription so far east as Silchester, in a district which could hardly have been Goidelic, makes one chary of drawing far-reaching ethnological inferences from two or three Ogam inscriptions, found, as they are in Breconshire, in the neighbourhood of an ancient avenue of communications between Ireland and parts of the West of England, such as seems to have run through the Usk Valley. Moreover, as Principal Rhys has pointed out, the Latin forms of the names found in bilingual Ogam inscriptions show clearly that Brythonic was socially the dominant Celtic language, though Goidelic may have existed in a position of inferiority. Nor is it safe to assume that the Ogam script was never used to write Brythonic as well as Goidelic, especially as the use in Ogam of "tt" for "th" and "cc" for "ch" would have been suggested, not by Goidelic, but by Brythonic usage. It seems hardly likely that orthographical ideas would have been borrowed from Brythonic to be used only in Goidelic.

"There is no reason for thinking, however, that any of the Breconshire Ogams are written in Brythonic. The "Mogvutreni" (Ogam) and the "Maccutreni" (Roman script) of the Trecastell inscription are unmistakably Goidelic. *The Trallwng and Glanusk Ogams seems to be themselves Goidelic, but the Latin inscription in each case, in the form of the proper names, suggests a Brythonic influence. Hence the precise ethnological inference to be drawn from this inscription is uncertain"!

Professor Anwyl, referring to Caratacus (Caradog), on page 36, writes: "Whose name was thoroughly Brythonic, and who was evidently himself a Brython."

Other remarks on Ogham Inscriptions will be found under a separate heading a few pages *postea* (page 151).

TURPILIUS.

As regards the name Turpilius, we can find no mention in the early history of Britain—we do, however, find the name Turpilianus. A few pages *antea* (page 128) we referred to the defeat of Manlius Valens, about the period of the death of Ostorius in A.D. 54—55. The Emperor Claudius replaced Ostorius by Aulus Didius Gallus, a man, according to Tacitus (*Annals*, Book xii., chap. 40, and *Life of Agricola*, C. 14) of inactive and mild spirit. In *Annals*, Book xiv., chap. 29, we read that the defeat occurred during the consulship of Cæsonius Pætus and Petronius Turpilianus.

* Compare also the Cilgerran Stone.

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To continue the history, Didius was succeeded by Veranius, who ravaged the terrorities of the Silures until his death, when Suetonius Paullinus succeeded to the government of Britain. Having overrun the Ordovician country his forces commit havoc by fire and bloodshed amongst the Druids of Anglesea, from which country he is summoned by the revolt under Boadicea, or Boudicca, of the Trinobantes and Iceni, in the eastern districts. Nero, who succeeded Claudius as Emperor of Rome in A.D. 55, despatches large reinforcements into Britain. The vacant ranks of the already disintegrated 9th legion are filled up with recruits from Germany, and with the 14th and 20th legions and other auxiliaries. Suetonius, after great slaughter, quells the revolt in A.D. 61, and follows up his victories with such relentless severity as to induce Julius Classicianus, who succeeded Catus, and was at variance with Suetonius, to propagate the notion (*Annals*, Book xiv., c. 38) "that a new governor was by all means to be waited for, who, being free from the resentment of an enemy, and the arrogance of a conqueror, would treat the foe with humanity on their submission," and, in letters to Rome, to send the advice, "that unless a successor were sent to Suetonius, there would be no end of the conquest."

This successor as Pro-prætor was Petronius Turpilianus, who had just ended his consulship, A.D. 61, and (*Annals*, Book xiv., c. 39), "taking care not to irritate the enemy, and receiving no provocation himself, veiled this state of spiritless inactivity under the honourable appellation of peace, "honestum pacis nomen segni otio imposuit"

The date of Turpilianus delivering his command to Trebellius Maximus is uncertain; idleness, licentiousness, mutiny, and inaction prevailed under the Pro-prætorship of Trebellius, nor was his successor Vettius, or Vectius Bolanus, who was sent to Britain by Vespasian in A.D. 69, able to restore discipline. This fell to the lot of greater generals such as Petilius Cerealis, who struck terror amongst the Brigantes in A.D. 70, with the aid oi his lieutenant Cnæus Julius Agricola; of Julius Frontinus, Pro-prætor in A.D. 75, who subdued the Silures; and of Agricola, who became Pro-prætor in A.D. 78, subdued the Ordovices and the people of Mona, and in A.D. 80, in the reign of the Emperor Titus, conducted his first Caledonian campaign.

Galba became Emperor of Rome on the death of Nero, in A.D. 68, June 10th, and was slain on the 16th December in the same year. According to Tacitus, Hist., 1, 6, Petronius Turpilianus was put to death by Galba in A.D. 68.

Again we must leave early Romano British History in order to return to the proceedings of the day.

At 3-30 p.m., in accordance with the arrangements, the botanists from Llangattwg Quarries were met at the south end of Crickhowell Bridge, and a visit was paid, by invitation, to the Park, through a plantation of magnificent beeches, fine gardens, and spacious greenhouses.

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From Crickhowell the drive of eight miles was charming, and under a much clearer atmosphere than prevailed in the earlier hours of the day. The route led through a sheltered plantation of finely-grown timber on each side of the road between Dan-y-parc and Dan-y-Graig, thence by Gilwern, Gofilon, through the beautiful gorge of Aberclydach, and Llanfoist, across the river Usk again, to Abergavenny, where, at 4-30 p.m., luncheon was served at the Angel Hotel.

After dinner the business of the Club included a resolution passed to give a donation of two guineas to the Caerwent Exploration Fund. Two members balloted for were elected, and four candidates were proposed.

Thanks were given to the various gentlemen who had given invitations or otherwise rendered assistance, including Lord Glanusk, Messrs. S. H. Cowper-Coles, F.S.I., of the Estate Office, Penmyarth; E. Pirie Gordon, of Gwernvale; J. T. Treloar of the School House, Crickhowell; and Rev. John Owen Evans, Vicar of Tretower. Disappointment was expressed because Mr. John A. Doyle, of Pendarren, Crickhowell, was unable to meet the party at Crickhowell with a view of joining the botanical excursion to Llangattwg Quarries.

At 6-40 p.m. the party left Abergavenny by train, due at Hereford at 7-40 p.m.

The Ordnance Maps for this district are as follows:—On the scale of one inch to one mile—Sheet 232 for Abergavenny, Crickhowell, and Table Mountain, and Sheet 214 for Pen Cerig Calch.

On the scale of six inches to one mile—Brecknockshire. Sheet xxxv., S.E., for Tretower Castle, Pen Cerig Calch, and Table Mountain. Sheet xli., N.E. for Glanusk Park and the village of Llangattwg, and Sheet xli., S.E., for Llangattwg Quarries.

The Geological Survey Map is Sheet 232; *Drift*, with additions in 1900, price 3s.; and *Solid*, published 1902, price 1s. 6d. *Memoirs of the Geological Survey; The Geology of the South Wales Coalfields, Part II.*, the country around Abergavenny, being an account of the region comprised in Sheet 232, 1900, price 2s., ought also to be consulted.

Here follows the list of the company present:—Members: The President, Mr. H. Southall, F.R. Met. Soc., Revs. C. Burrough, C. B. Caldicott, W. S. Clarke, H. M. Evill, J. E. Grasett, C. Harington, E. Harris, D.D., E. J. Holloway, A. Ley, Claud Lighton, H. B. D. Marshall, H. P. Powell, and F. S. Stooke-Vaughan, Messrs. T. S. Aldis, J. U. Caldicott, R. Clarke, Luther Davis, E. W. Du Buisson, H. Easton, C. J. Fricker, E. A. Gouring, E. J. Hatton, J. Probert, with T. Hutchinson and H. Cecil Moore, honorary secretaries, and James B. Pilley, assistant secretary. Visitors: Revs. Green-Price, Jno. Owen Evans, Vicar of Tretower, and F. J. Riddelsdell, of St. Michael's College, Aberdare, Messrs. J. Brade, J. D. Hatton, A. G. Hudson, A. Williams, of Abergavenny, and W. H. Woodcock.

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SHORT REFLECTIONS.

The existence of tumuli, a cromlech one mile north-west of Crickhowell, numerous camps and gaers, vestiges of ancient roads, ruined castles, memorials of early days evidenced in stone monuments scattered over the district, some of them inscribed, maenhirs, some of which may probably have been boundary stones, finds of Roman coins,* and the site of an undated battle upon the moorland between Brynmawr and the cliffs of Llangattwg, provoke a reflection upon the many disturbances this part of the kingdom has witnessed. For a long period subsequent to the overrunning of their country during the Roman occupation, warfare seems to have remained the business of the descendants of the warlike Silures,† and of the strangers who overran the country, affording no opportunity for the cultivation of the arts of peace.

The following is the summary given by A. G. Bradley, on page 14 of his introductory sketch of *Owen Glyndwr*, 1901 :—"For nearly seven centuries there were separate sources of strife in Wales, and three distinct classes of warfare. First there came the meritorious defence of the country against Saxon, Dane, and Norman, in which, upon the whole, there was much creditable unanimity. Secondly, during the lulls from foreign invasion, there was almost constant strife between North and South, Powys holding, as it were, the balance of power between them. Lastly, there were the purely provincial quarrels, when heady chieftains fell out with their superiors, a form of entertainment to which South Wales was peculiarly prone."‡

Following the marauding invasions by the Danes, who penetrated more or less into the interior, the Normans early established themselves in the outlying Principality of Deheubarth, and built castles as far north as Dynevor and Llandovery, in the Vale of the Towy. The reunion of this district with the other two Principalities of Gwynedd, in the North, and of Powys, comprising Montgomeryshire, Radnorshire, and part of Denbighshire, was obtained by Llewellyn ab Jowerth, surnamed "the Great," who succeeded in getting himself recognised as Prince of Dynevor. Owing to the duplicity of the false Gwenwynwyn, Llewellyn had to submit to Henry III. at Worcester, in 1218. A grandson, another Llewellyn, brought Breconshire under his rule, and his victories were accompanied with much destruction and burning of castles in South Wales. His intrigues with revolted English barons were the

* At the meeting of the Cambrian Association in August, 1902, at Brecon, Lord Glanusk told his audience, with reference to the Camp at Gaer, near Tretower, that a farmer informed him that his father had ploughed up "an old Roman in a stone coffin." To the question—"What did he do with him," he received the reply—"Ploughed him in again."

† Tacitus, in *The Life of Agricola*, c. xi., calls attention to the different physical characteristics of the inhabitants of different parts of Britain, ascribing such differences to separate sources of each separate section, e.g. :—"The swarthy complexion and curled hair of the Silures, together with their situation opposite to Spain, render it probable that a colony of the ancient Iberi possessed themselves of that territory." Again :—"The ruddy hair and large limbs of the Caledonians points out a German derivation. Those who are nearest Gaul resemble the inhabitants of that country."

‡ For a concise abstract of Welsh History, see Chapter I. of *Owen Glyndwr*, by A. C. Bradley, The Knickerbocker Press, 1901. See also Chapter VI., entitled "The Conquest of Britian" in *The Life and Principate of the Emperor Nero*, by Bernard W. Henderson, published by Methuen, 1903.

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cause of war with Edward I., whose successes were followed with such severe treatment of important personages as to become intolerable, and provocative of a general revolt amongst the Welsh people. This led to a formidable invasion of Wales by larger forces bent upon irretrievably crushing Llewellyn, who was betrayed into a trap near Builth and slain, December 10th or 11th, 1282. Near the site of his death a memorial has recently been erected.* His colleague and brother David, commanding in North Wales, was hanged, drawn, and quartered in 1283. Thus ended for ever the royal Cymric line. The attempt to continue the strife under Madoc was unsuccessful, and by Statuta Walliæ, dated March 19th, 1284, Wales was incorporated with England.

The Welsh custom of dividing a principality among the sons of a prince upon his death had led to endless subdivisions, incessant quarrels about boundaries, and to murders. Incessant strife and intestine divisions never appeased between the princes of small principalities, scattered over the main divisions of the county, tended to exhaust their strength, and produced such a condition of general unrest as to contribute in no small degree to their final conquest by the English.

Once again for a while, in the early part of the 15th century, a bond of unanimity prevailed under Owen Glyndwr, during whose successes, defeats, and wanderings, large portions of Wales were devastated by each side alternately during the reign of Henry IV., Bolingbroke.

For nearly fifteen years was warfare carried on under Owen Glyndwr and his lieutenants. In 1401 Mid Wales and the border were ruthlessly ravaged with pitiless severity. Upon the ramparts at New Radnor 60 men were hanged. In 1402 eleven hundred of the English were slain in the great battle of Pilleth, near Knighton, under Owen's lieutenant Rhys ap Gethin, and the towns of Abergavenny and Cardiff were destroyed. In 1403-1404 fire and sword swept over the unhappy Marches; Herefordshire, Breconshire, and South Wales were visited with fire, ruin, and slaughter. Prince Hal, son of Henry IV., lieutenant of the Marches, often made his headquarters at Hereford and at Grosmont. Owen was ravaging in Carmarthenshire when his ally Hotspur was defeated with great slaughter in the battle at Shrewsbury. Shortly afterwards Owen's forces came into Herefordshire, and on reaching Leominster extracted fines and special terms. Whilst the King was reinforcing with stores, &c., the garrisons of Goodrich, Ewyas Harold, and Abergavenny, Owen was pressing hard upon Cardiff Castle. In 1405 Glyndwr's forces, after burning Grosmont, were defeated severely by the King's forces under Talbot, and again within a week upon the Breconshire border.

The French, invited by Glyndwr, swelling his forces considerably, carried on marauding and destruction in the south-western parts of the country. Guerilla warfare was conducted over the Welsh country for several years, even after the capitulation of Aberystwith in 1408, and the

* At Cefn-y-bedd, near Builth Wells, and within a few minutes' walk of Cilmery railway station.

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capture of Harlech in 1409, and occasional outbreaks under the partisans of Glyndwr, now a fugitive wanderer with power considerably broken. The general pardon and amnesty proclaimed to all, including Glyndwr himself, by Henry V., Monmouth, on his succession to the throne in 1413, once more secured the blessings of peace.

This portion of the country was less disturbed during the Civil Wars of 1642 to 1649, than were the northern, the southern, and the south-western portions of the Kingdom. Breconshire, by preference, would have remained neutral, but eventually decided in favour of the King. In 1645 Brecon Castle was held for the King, but only for a short time, and the country was reported by the Parliamentarian commanders as reduced. The inhabitants of Brecon, considering that their castle might again become an object of contention, craftily diverted the scene of warfare from their midst by pulling it down.

The Act of 1535, temp. Henry VIII, united England and Wales, and the principality was divided into shires.

Following such a continuity of disturbances, and terrible shocks which this district has undergone, with wanton disrespect of even religious buildings, it is a matter of surprise that so much remains still extant of memorials of ancient days, or that there were any monasteries left for King Henry VIII. to dissolve.

ALTITUDES AROUND CRICKHOWELL.

	Height in feet.	Sheet of Ordnance Map on the scale of 1 inch to 1 foot.
In Monmouthshire.		
Mynydd Pen-y-fal—generally known as the Sugar Loaf	1955	232
Blorenge	1834	232
Skirrid fawr—The Great Skirrid	1596	232
Skirrid fach—The Little Skirrid	886	232
In Herefordshire.		
Black Mountains, in the township of Crasswall, on the boundary line between Herefordshire and Breconshire. See Ordnance Map, Herefordshire, 37 S.W.	2306	214
In Breconshire.		
Crug Hywel—Hywel's Rock. Also called Table Mountain	1481	232
Pen-Cerig-Calch—The top of the limestone crag	2302	214
Pen Allt Mawr (two miles N.W. of Pen-Cerig-Calch)	2358	214
Pen-y-gader fawr	2624	214
Waun fach	2660	214

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Standing upon the Wye Bridge, in the City of Hereford, and looking southwards, we can see, in clear weather, over the skyline of the Black Mountains, which, upon the boundary line between Herefordshire and Breconshire attains an elevation of 2,306 feet, the summits of two hills in Breconshire, situated, as the crow flies, six miles further west. Pen-y-gader fawr, the most southerly of the two, is 2624 feet high, and Waun fach, on the same range, one mile and a half further north, attains the height of 2,660 feet. Pen-y-gader fawr is four miles north of Pen-allt-mawr, and Pen-allt-mawr is two miles north-west of Pen-cerig-calch.

This range of hills in Breconshire runs nearly parallel to the range of the Black Mountains. The general trend of the ranges is N.N.W. to S.S.E., and the greatest heights are in the north-west.

The Brecon Beacons, 2,907 feet high (New Series, Ordnance Map, Sheet 213),* 32 miles south-west of Hereford, cannot be seen over the intervening heights of the Black Mountains from Hereford, or the southern parts of the county. The traveller by the railway from Hereford to Hay can obtain a view of them for a short distance near Whitney Station if his seat is near the window, if he looks forward in the direction of his route to Hay, and a little to his left. The characteristic outline of their peaks is easily discernible and cannot be mistaken.

A line drawn in a south-westerly direction from the City of Hereford intersects the easterly ridge of the Black Mountains at the distance, as the crow flies, of 14 miles, Pen-y-gader fawr at 20 miles, and the Brecon Beacons at 32 miles.

The highest elevation in Herefordshire, 2,306 feet, is on the boundary line from Breconshire, at a point a mile and a half south of the sharp well defined declivity near Hay of the northern extremity of the Black Mountains. It is in the township of Crasswall.

RECORD OF RARE FACTS.

Ornithology.

Arctic Tern (Sterna macrura). To Mr. James W. Lloyd we are indebted for this record. The bird was picked up dead on 1st June at Stansbach, in the parish of Staunton-on-Arrow. It was in perfect plumage. It is an unusual season of the year for a bird of this species to wander so far inland. It had been seen two or three days previously flying about in the neighbourhood.

It is believed to be the first record of this bird in Herefordshire, seeing that the name does not appear on page 225 of Mr. Hutchinson's list in *Transactions*, 1899.

* On Sheet Brecknockshire XXXIII. S.E., dated 1891, the most northerly Beacon, Pen-y-Fan, is given 2905·9, and Corn Du, half-a-mile south-west, 2862·7 feet.

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OCCURRENCE OF RARE BIRDS IN HEREFORDSHIRE.

By James W. Lloyd.

On the 5th of February last, I had the pleasure of inspecting a specimen of a bird which is a rare visitor to Britain, and as this was obtained in the County—the first on record—it is desirable that the occurrence should be recorded in our *Transactions*.

It is a Glossy Ibis, *Plegadis falcinellus*, in immature plumage, and was first observed wading in a small pool at Winforton, and shot as it rose, about the third week in December last. It is stated that a second bird was observed in the neighbourhood, but of this there is no proof.

The species is widely distributed in Europe, Asia, Africa, and America, its principal breeding places in Europe being in the marshes of Slavonia, Hungary, the Valley of the Danube, and South Russia.

In the 18th century the Glossy Ibis was fairly common in Norfolk, and known to gunners and fishermen as "The Black Curlew." It has occurred in many English counties, also in Ireland and Scotland, but principally in the southern and eastern parts. It has, however, visited Lancashire several times, and has been adopted as part of the arms of Liverpool, the bird being known as a Liver.

The nearest points to this county in which specimens have been obtained are Carmarthenshire, one in April, 1858, and in Shropshire in 1854, where two occurred near Sundorne, one of which was shot and would have been unrecorded but for a singular circumstance, as mentioned in Mr. Forrest's "Fauna of Shropshire," pp. 140 and 141, viz., the resemblance of the bird to the Curlew, the man who shot it happening to be in a shop at Shrewsbury where cases of stuffed birds were exhibited, among them being a Curlew, when he remarked that he had shot a *black* one on the previous day. This led to the preservation of the bird, which would otherwise have formed food for the farmer's pigs. The description of young birds given in the last edition of Yarrell's "British Birds" agrees with the specimen now recorded, viz., "the head, cheeks, and upper part of the neck behind are dull clove-brown, intermixed with short hair-like streaks of greyish white; the whole of the body above and below, the wings, and tail dull uniform liver brown, with very little of the glossy tints observable in older birds, which are obtained gradually."

I have also to record the occurrence of a specimen, in immature plumage, of the Pomatorhine Skua (Stercorarius pomatorhinus, *Temminck*), which was picked up in an exhausted state at Marston, about end of October last, and is now in my possession. This appears to be the second occurrence of the species in this county, there being one in the museum which was trapped at Foxley in 1882.

Since the above was written, we have come across the following amongst the Ornithological Notes in the Report and Transactions of

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the Cardiff Naturalists' Society, 1903, vol. 36, page 128:—For the following interesting note we are indebted to Mr. Percy Laybourne, Caerleon.—"On the afternoon of October 11th, 1902, a labourer observed a large bird flying high over the town of Newport, mobbed by a number of smaller birds, which afterwards proved to be rooks. To escape their attacks the strange bird, which flew like a Heron, dived towards the earth, crossed and re-crossed the Usk, and alighted in a field on the bank. It was thirsty and drank from a pool. It seemed very tired, laid down and got up again several times, behaving like a worn-out Carrier Pigeon. It was eventually shot by the man who watched it all this time—about 20 minutes. The bird proved to be the Glossy Ibis, an adult male in winter dress, having the characteristic metallic lustre on its plumage. About the same time an immature specimen was shot near Stalham, Norfolk, being sooty-black, without, of course, the sheen of the mature bird. In Norfolk, apparently the most favoured place in England of this rare visitor up to last year, only two or three specimens had been obtained since 1833, the last being killed on September 13th, 1868, also in that part of the Broadlands."

PLANTS OF CRAIG CILLE, BRECONSHIRE.

By Rev. Augustin Ley.

The cliff is better known, locally, as "Llangattwg Quarries," and we advise those wishing to visit it to ask their way to "Llangattwg Quarries," or better still, to the Cave, which is the principal object of interest to most visitors. It is, however, a natural cliff, which has been subjected at its eastern base to quarrying, for the sake of the limestone; and on a fine day the outlines of the cliff are beautiful. The vegetation of the cliff is, generally speaking, that of most mountain limestone cliffs, but it is rich, even for limestone. This may be due to the northern aspect, or again in part to the fact that being in many places quite precipitous, it baffles those destroyers of rare plants, the sheep.

The Privet and the Yew cling to its crevices, both here truly native; as is also the Small-leaved Lime (Tilia parvifolia); the Limestone Bed-straw (Galium sylvestre), and the Mountain Rue (Thalictrum montanum) are abundant; a minute Forget-me-not (Myosotis collina), which is rare in Breconshire, is found here; the Round-leaved Sundew (Drosera rotundifolia), and the pretty shrub Alder Buckthorn (Rhamnus Frangula), also grow in boggy ground below the cliff; while several ferns of interest inhabit the crag or the region of limestone shingle at its base. Brittle Fern, Green and Black-stalked Spleenwort, and the whole race of Polypodies, the Common one, with its rarer sisters Oak, Beech, and Limestone Fern were all found on the day of the Club's visit, and the Small Limestone Solomon's Seal (Polygonatum officinale) occupies shady ledges, its only known habitat in South Wales.

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It would be useless to try to speak in particular of the Hawkweeds of Craig Cille. Suffice it to say that some seven or eight species, all of botanical interest, clothe the rocks. Five were gathered on the day, the names of some of which are still *sub judice*.

But the White Beams, or Service-trees, are of more general interest. At least three of these trees grow on the Cliff, the Common White Beam, in its mountain variety (Pyrus rupicola), the Lobed White Beam (P. intermedia), and the Least White Beam (P. minima). They are all beautiful shrubs or small trees, but it is to the last that we hasten on, as constituting *the* botanical rarity of the spot.

None of the plants enumerated above would have rendered the cliff famous; but that a small tree should be growing in many hundreds of shrubs over its surface, which apparently grows nowhere else in the world, is very remarkable; (we say *apparently*, because if any botanical prophecy can be sure, it is that a plant which appears confined to a single station will sooner or later be found elsewhere). But it is at present unknown elsewhere. This tree is a near relative of the Common Mountain Ash, but is quite distinct from it both in leaves and fruit. It is also nearly related to another rare shrub of the same group, P. scandica, which is a native of Breconshire, growing on another limestone cliff about 12 miles south-west of Craig Cille, but it is nearest of all to two forms of the same group, which have long been known to inhabit the Scotch Isle of Arran. From these latter it differs, slightly but decidedly, in the form of the leaf, but especially in the ripe fruit, which in our present plant is nearly round, and of a very beautiful carmine red, precisely of the shape, size, and colour of a ripe holly berry. It is, moreover, a smaller shrub than any of its allies, with shoots more lithe and more slender.

It required a good deal of search among specimens of these nearly allied shrubs, in the British Museum and elsewhere, before our plant could receive a distinctive name; but failing identification with anything else, in due time it received the name of Pyrus minima, the "Least White-beam." It was subsequently sent, along with the Arran forms and the Breconshire Pyrus scandica, to Prof. Koenen, the Continental *savant* of this group. The Professor considered the P. scandica to be the true plant, but the Craig Cille and Arran shrubs he considered to represent a series of hybrids between P. Aria (Common White-beam) as the one parent and P. Aucuparia (Mountain Ash) as the other; and he ventured to predict that other forms, hybrid between these two, would be found in the mountain districts of Britain, if searched for where the two parents grow in proximity. Now that such a hybrid series exists commonly in Britain, every observer who has been on the look out for these plants will agree with me in denying I have myself taken a considerable interest in them for some years; and though one cannot, of course, say that they never occur, one can safely say that they are not common. With the Professor's theory of hybridity it is not so

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easy to deal, because "hybridity" is now often used to signify the hybrid origin of a *race*, and a question is thereby raised which leads too deep into the process of species-evolution to be now discussed; but that P. minima is simply a cross between the P. Aria and P. Aucuparia of Craig Cille, is, I venture to think, an untenable theory; and I feel sure that anyone studying these trees on Craig Cille will bear me out.

A good figure and a short description of this shrub will be found in our *Transactions* for 1897, reprinted from the *Journal of Botany*. (See *Transactions of the Woolhope Club*, at the end of the volume, 1895, 1896, 1897.)

OGHAM INSCRIPTIONS.

Ogham inscriptions consist of notches of various lengths cut on the edge or arris of stones.

They are found principally in Ireland—other instances have been recorded from Wales and Scotland, including the Orkney and Shetland Islands,—and a few have been found in South-western England and in the Isle-of-Man.

In South Wales the inscriptions have been found frequently accompanied by epigraphs in Roman characters. These bi-lingual examples have proved a valuable medium for the correct rendering of the Ogham, which otherwise seemed designedly obscure, with a certain resemblance to the Scandinavian Rune, although in ancient Irish manuscripts a key to the interpretation of Ogham is given.

Of these Celtic Monumental Inscriptions, Sir Samuel Ferguson informs us* of nearly 200 in Ireland, 18 in Wales, 2 in South England, 6 on the mainland of Scotland, and 4 in the Orkney and Shetland Islands, he writes (page 2): "The subjects of the tests are almost exclusively proper names connected by the word *Maqi*, accepted as meaning "Son of."

The process of the Ogham seems to have been adopted on the foundation of the Irish *Bethluisnion*, an alphabet designated by straight strokes, the significance of which depends on its division into four categories of five letters each, thus:—

B, L, F, S, N; H, D, T, C, Q; M, G, NG, ST, R; and A, O, U, E, I;

which divisions have their names of the 'B' *aicme* (kind or following), the 'H' *aicme*, the 'M' *aicme*, and the 'A' *aicme*.

Page 4. "The letters of each *aicme* are represented by a set of strokes, beginning with a single digit, increasing in progressive order from one to five; and according as these digits and groups of digits are arranged under, over, and across, or upon the stem line, they represent

* In his "Ogham Inscriptions in Ireland, Wales, and Scotland," published 1887, David Douglas, Edinburgh.

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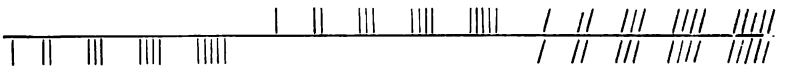
the letters of the 1st, 2nd, 3rd, and 4th *aicmes* respectively, on the plan of one digit for the 1st letter, two for the 2nd, and so on to five digits for the 5th letter of each *aicme*.



On page 5, Sir Samuel remarks:—"There is one feature in the Ogham which seems to establish that its framers were of the Latin rather than the Teutonic branch of the European family. The 'H' *aicme* (H, D, T, C, Q) is apparently an anagram drawn from the united letters of the cardinal numbers one, two, three, four, five—that is, in insular Celtic speech, h'æn, da, tri, cathar, cuig."

Page 6, par. 8. "The reading which generally gives the right transliteration proceeds from left to right," &c.

Amongst students and enquirers must be named Mr. Richard Rolt Brash, of the City of Cork, architect (mentioned on p. 13), whose papers (p. 16) were put into the hands of Mr. G. M. Atkinson, Dept. Science and Art, and under his editorship, in 1879, appeared in a handsome quarto volume entitled "The Ogham inscribed Monuments of the Gaedil in the British Islands."

To anyone interested in following the notices of these Monumental inscriptions a perusal of Sir Samuel Ferguson's book would be highly interesting. We give here some extracts from the concluding paragraph of Chapter I.:—

"The main questions agitated are—Whether the Ogham is of Pagan or Christian origin; whether, if of Pagan origin, any of the monuments are Christian; whether the Welsh imparted it to the Irish, or *vice versâ*; and whether its forms belong to a vernacular or to an artificialised and technical language . . . . I shall be able, I think, to show reasonable grounds for believing that the bulk, if not all, of our Ogham monuments are Christian; that some of them represent, perhaps, as old a Christianity as have ever been claimed for the Church in either island; and that the "*Scoti in Christo credentes*," to whom Palladius was sent by Pope Celestine, in the 5th century, were, especially in the south of Ireland, a more numerous and better organised community than has generally been supposed. I shall, I think, bring Irish Pagan and British Christian monumental usage into actual contact in Wales, and contribute something towards the further elucidation, as Christian monuments, of the Sculptured Stones of Scotland."

His book treats of Ogham Legends in Ireland as follows:—41 in Co Kerry; 22 in Co. Cork; 9 in Co. Waterford; 4 in Co. Kilkenny; 3 in Co. Kildare; 2 in Co. Wicklow; and 1 each in Co. Clare, Roscommon, Mayo, Tyrone, and in the Museum, Royal Irish Academy, Dublin, in which Museum there is a collection of other examples.

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In Scotland: He treats of 3 in Shetland; 1 in Orkney; 3 in Aberdeenshire; 1 each in Fifeshire, Elginshire, and Sutherland.

The following is a list of the Ogham Legends treated in Chapter VI.:—

Paragraph.			Page.
188.	Filliani	Cwm Glyn, Pembrokeshire ...	114
189.	Turpilli ic iacit, &c. ...	Crickhowell, Breconshire ...	114
190.	Hogtivis fili Demeti ...	Treffgarn, Pembrokeshire ...	115
191.	Sagramni maqi Cunatami ...	St. Dogmael's, Cardiganshire ...	115
192.	Trenaccattlo	Llanfechan, Carmarthenshire ..	116
193.	Etterni fili victor	Clydai, Cardiganshire ...	116
194.	Trenegussi fili Macutreni, &c.	Cilgerran, Cardiganshire ...	116
195.	Tovisaci	Pool Park, Denbighshire ...	117
196.	Enabarri	Buckland Monachorum, Devonshire	117
197.	Fanoni Maquirini	Fardel stone, British Museum...	117
198.	Humeledonas, &c	Llandewke, Pembrokeshire ..	118
199.	Cunacenna fiil (*sic*) ffeto ...	Trallong, Brecon	119
200.	Doftacoos	Dugoed, Cardiganshire ...	119
201.	Affi boci beffe	Llanwinio, Middleton Hall, near Llandeilo	120
202.	Catuocon, &c.	Caldey Island, Pembrokeshire...	120
203.	Netta Sagri, &c.	Bridell stone, Cardiganshire ...	121
204.	*Pumpeius Carantorius ...	Kenfigg stone, Pyle, Glamorganshire	122
205.	†Maqitrenii salicidni ...	Llywell stone, British Museum...	124

* Not bilingual. Sir S. Ferguson writes:—"The *e* is of the Irish or Hiberno-Saxon form, e being with one exception, the only instance in which the Roman epigraphs associated with these Welsh Oghams exhibit the late Irish influence. Its presence would seem to me to denote a period when personages bearing Roman names of distinction were no longer resident in Britain, and to show that Ogham writing and the word maqi for 'son' lingered in Britain, at least until after the Irish character had been partly adopted into lapidary writing."

† Found (so Sir S. Ferguson believes) at a place near Trecastle in Breconshire, called Pant y Cadno, charged face, back, and one arris with inscriptional work. . . . . The uncertainties are whether the first letter is M or V, and whether the sixth letter from the bottom is a C or a debased G. To my eye the initial is V and the other G, yielding the reading

VACCUTRENII MAQI SALIGIDUNI.

It is the only instance of a Latin *maqi*, and appears to commemorate Maccutren, son of Salgin or Sulgen, and is echoed by the shorter Ogham.

MAQITRENII SALICIDNI.

Maccutrenus is already familiar to us (see No. 194, at Cilgerran, in Cardiganshire), and may be Irish or British Celtic. Sulgen is Welsh, and, I would suppose, may equally be Irish (page 124).

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Woolhope Naturalists' Field Club.

THIRD FIELD MEETING (LADIES' DAY), THURSDAY, JULY 23RD, 1903.

CHURCH STRETTON.

The great natural beauties of Church Stretton and neighbourhood, the varieties of scenery from the various undulations and wrinkles on the earth's crust, the associations of Antiquity interspersed over the district, the Flora of the uplands, woodlands, plains, and marshes, the Entomology, and the complicated and diversified nature of the Geology displayed to view from some of the eminences, have deservedly rendered this locality one of the most favoured for the field excursions of the Woolhope Club, if we are to form our judgment from the number of times it has been selected for a visit.

This is the seventh time this district has been visited by the Woolhope Club. The scientific pursuits of the Caradoc and Severn Valley Field Club have added considerably to our knowledge of its natural and local history. Now that the purity, softness, and excellence of its water, the specially bracing nature of its climate, the area of the town, lying at an altitude of between 600 and 800 feet above the sea, surrounded by hills rising to an elevation of from 1,500 to nearly 1,700 feet, have become more generally known to the public, Church Stretton has become more popular as a health resort, and during the last ten years the development of good-class buildings has made a great advance.

The following references are given to previous visits recorded in the volumes of the *Transactions* of the Woolhope Club.

Transactions, 1862, September 18th.

„ 1870, August 19th.—"The Geology of the Longmynd Hills," by Rev. J. D. La Touche, pp. 121 to 128.

"The more Rare Plants of the Longmynds," by Dr. Griffith H. Griffiths, pp. 148 to 157.

"The average rainfall" (for the 5 years 1865 to 1869), given by Rev. E. Donald Carr as 33·728 inches, and of the previous 5 years (1860 to 1865), given by G. F. Symonds as 35·21 inches.

„ 1874, pp. 1 to 5.—Church Stretton for Caer Caradoc, on May 15th.

„ 1880, pp. 246 to 248.—Church Stretton for Longmynd, on August 24th.

„ 1888, pp. 234 to 242.—Church Stretton for Plaish Hall and Caer Caradoc, on July 17th.

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Transactions, 1894, pp. 220 to 237.—Church Stretton, July 26th, For Botany see p. 221 ; for Iter. XII. of Antoninus see p. 229.

To-day the route taken by the majority of the party was directly by Burway Hill and Devil's Mouth to the summit of the Longmynd, where, at the Pole Bank, the elevation of the trigonometrical station of the Ordnance Survey is given 1696 feet, on Sheet 166, dated 1899. The atmosphere was clear for distant views.

Standing upon the Longmynd, as a base or starting point, an elevated tract of moorland extending N.N.E. and S.S.W. for about ten miles from Plowden in the south, and for a width of about three miles from Stretton to Rattlinghope, the dominant feature in the landscape is the general north-east and south-west alignment of the surrounding hills, from, as the crow flies, the Brown Clee and Titterstone Clee Hills twelve miles to the south-east, the Wenlock Edge six miles distant, and what may be generally termed the extension of the Caradoc Hills to the Wrekin about 15 miles distant in the north-east.

Westwards, at the distance of about five miles, is the range of The Stiperstones, consisting of sandstone passing into crystalline quartzite, a total extent of ten miles from Pontesbury, near Shrewsbury, to Snead, near Bishop's Castle, distinguished by prominent bosses of rock standing out at intervals along its crest, and the dark mass of Corndon, volcanic, appearing over its southern end. These prominent bosses are like rugged cyclopean ruins, some of the principal being 50 or 60 feet high, and 120 or 130 feet in width. (Proc. Geol. Assoc., Vol. III., 1872). See also "Scenery of England," by Lord Avebury, Fig. 93, page 250.

About eight miles further west is the The Long Mountain, beyond which are the irregular outlines of the Breidden Hills. Plinlimmon, 2,468 feet high, the source of the rivers Wye and Severn, and Cader Idris, are also situated in the extreme distance.

Commencing with the Wrekin, 1,335 feet high, in the north-east, and proceeding to the south-west, we have successively the following elevations :—Acton Burnell, 790 feet ; Birch Coppice or Lodge Hill, over 900 feet ; The Lawley, 1,237 feet ; Little Caradoc, over 1,000 feet ; Caer Caradoc, 1,506 feet ; Helmeth, about 1,100 feet ; Hazler, 1,137 feet ; Ragleth, 1,275 feet ; the high ground about Coombehead, about 800 feet ; in the south, Wart Hill and Hopesay Hill, each of them over 1,000 feet.

The Lawley range exhibits a long billowy and undulatory sky line. The Caradoc Hills have a more ragged outline with spurs. A transverse section through the south-west end of Caradoc and the Cwms looking north, represent three spurs on the summit of Caradoc as a prominent feature, to which the name has been given of "Three Fingers Rocks." See Plate III. of "Church Stretton," Vol. 1.

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Eastwards of the Caradoc ranges an elevation of 1,396 feet is given, and beyond a considerable area of high land above 1,250 feet in the hills of Hope Bowdler, Willstone, and Cardington, is the wide open valley of Apedale, which drains into the Onny River, bounded on the east by the Wenlock Edge, of which the average altitude is 800 feet. Abdon Burf, from 5 to 6 miles east of Wenlock Edge, rises to 1,792 feet; it is the northern end of Brown Clee Hill, and is 43 feet higher than the Titterstone Clee Hill, seven miles southwards, of which the elevation given on Sheet 181 is 1,749 feet.

A few members of the party, less active than the rest, instead of ascending Burway Hill, descended into the Carding Mill Valley, the entrance into which at this season of the year was magnificently ornamented with the blossoms in great profusion of the Mimulus, or Monkey-plant, a garden escape which here has been perfectly naturalised. Its large bright yellow flowers with dark orange spots bordered the streams, and covered a large expanse with its attractive colouration.

The weather remained fine until about two o'clock, when a succession of intermittent showers made the travelling over the wet heathery ground very uncomfortable for those who, on their return journey, had made across the moorland country from The Portway on the summit of the hill towards the Carding Mill Valley. Some, however, visited one of the many Antiquities of the locality, an ancient earthwork named Bodbury Ring on the hill immediately above, and north of, Carding Mill.

Of the Antiquities in this locality there are numerous barrows, or tumuli, extending for a distance of five miles. The majority are upon the eastern side of The Portway, and with few exceptions are marked upon the Ordnance Maps on the scale of six inches to one mile, Sheets, Shropshire, 55 N.E, 55 S.E., and 63 N.E. In the years 1895 to 1897 they were examined by Messrs. E. S. Cobbold, Wm. Phillips, and J. G. Dyke, and we are glad to find in "Church Stretton," Volume III., which has been issued since our visit, a descriptive record of each, illustrated by a map indicating their positions. As many as 25 are described.

"Church Stretton: Some results of Local Scientific Research" is the work of local experts, principally members of our kindred Society, the Caradoc and Severn Valley Field Club, published by L. Wilding, Shrewsbury, in three volumes. Volume I. treats of the local Geology, Macro-Lepidoptera, and Molluscs. Volume II. treats of Birds, Botany, and Parochial History. Volume III. treats of Camps and Churches. This compilation is the work of authors well known as experts in the various branches of scientific and local history; it gives the results of careful personal research, extending over a series of years upon the spot, and its reliability is enhanced by the general accuracy and conscientious painstaking which has evidently been bestowed upon its pages. With an equal conscience we hope the volume will soon be upon the shelves of

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every lover of the diversified natural beauties and wonders of this lovable country. To the visitor and the resident they are essential if he has any spark of love of his own country, or any branch of natural history of the ground on which he treads.*

Mr. E. S. Cobbold, F.G.S., a local resident, concludes his 113 pages on the complicated geology in the following words :—"In writing this article I have had in mind throughout the wants of a lover of geology coming into the district, and desirous of spending a few days among its rocks. I have, therefore, mentioned or described most of the fossiliferous localities and the main rock exposures, so that he may select at once those which are of greatest interest to himself, and find them readily."

On pages 3 and 4 of Volume I. Mr. Cobbold gives a valuable list of works referred to in his article; these are legion, owing to the fact that the local geology has for many years engaged the attention of our most able geologists. The special papers prepared for the visit of the Geologists' Association in 1894, by Professors Lapworth and Watts, occupy pages 297 to 355 of the August number, Part 9, Vol. XIII. The Figures 9 and 10 on pages 314 and 315 show at a glance the interesting geological sections from the Breidden Hills to Brown Clee. See also the plan on page 299.

Briefly summarising, to whet the appetite of the geological visitor, stranger to the district, we may say a fault of great throw running along the fracture line sweeping from N.E. to S.W., from Lilleshall Hill through the Wrekin and Stretton Hills down to beyond Old Radnor, has complicated the study of the geological features with a cluster of unconformities, ranging from the Longmyndian to the Lias.

The regularity of the general N.E. and S.W. or N.N.E. and S.S.W. alignment is occasionally broken by the intrusion of igneous rocks. A ring of volcanic hills, extending from the Wrekin to Church Stretton and back from Chittol to Pontesbury, wrinkles the crust with some striking isolated outlines.

"From our position on the Longmyndian moorland, and taking the Longmyndian and Uriconian volcanic hills as the oldest rocks, we meet as we view westwards newer and newer groups in succession over Tremadoc, Arenig, Llandeilo, Bala, Llandovery, Wenlock, and Ludlow strata, up to the Old Red Sandstone of the Long Mountain, where a syncline intervenes, and we begin to descend the series again to the Bala rocks of the Breidden Hills. On the east we cross the *Olenellus* and *Olenus* zones of the Cambrian, the Bala or Caradoc rocks of the Ordovician, and then the divisions of the Silurian and Old Red Sandstone up to the Carboniferous of the Clee Hills and the Coalfield of the Forest of Wyre." Page 300, Proc. Geol. Assoc., 1894.

* The volumes have recently been favourably reviewed in *The Athenæum*, August 20th, 1904, p. 244.

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With Volume I. of "Church Stretton: Some Results of Local Scientific Research" in his pocket, the pedestrian geologist will feel grateful to Mr. Cobbold for the details of interest he has so systematically localised, and will unite with us in the sincere hope that the sale of the three volumes will early prove sufficiently encouraging to the publishers to supply a geologically coloured map in the second edition.

A good pedestrian will find, when the hours of daylight are long, a stiff walk if he follows the route traversed by the party of the Geologists' Association, as chronicled in their Proceedings, Vol XIII., 1894, page 383, by entering the Carding Mill Valley, ascending the hill through the Light Spout Valley, and following the rising succession of Longmynd (Monian) rocks through (1) contorted dark thin shale series; (2) the banded group; (3) the purple slate; (4) hard graywacke; (5) purple slate and grits to the purple grits (Cambrian of Blake), the principal divisions of the Lower or Slate series of the Longmynd at the present time generally regarded as of Pre-Cambrian age, Professor Blake grouping them with his Upper Monian.

Having arrived at the top of the hill, The Portway, by extending his walk to the south-west as far as the Pole Bank, he may inspect the striking features presented by the Conglomerate Beds of the Upper or Grit Series.

The return journey may be varied across the moors in a south-easterly course, south of Round Hill, and into Ashes Hollow. *En route* annelid markings may be searched for in the slates of Long Synalds. The geological succession will be passed over in the reverse order in the descent to Little Stretton, where the unconformable overlap of the Llandovery rocks must be examined.

As regards the antiquity of the rocks under view from some of the eminences, those of the Wrekin, Caer Caradoc region, and the Longmynd area, are of greater age than the Alps and the lofty Himalayas. Caer Caradoc, like the Wrekin, is a wedge of pre-Cambrian eruptive rock, bounded by faults on all sides, thrust up through younger deposits: the whole ridge may be calculated as 7 or 8 miles long by half a mile in width.

"The interval of time between the Longmynd rocks and the Silurians must have been very great, as is shown by the fact that the Cambrians were tilted before the Silurians, which lie on their upturned edges, were deposited. Though very ancient, and probably of Pre-Cambrian age, the Longmynd rocks themselves are long subsequent to the Wrekin, as is proved by the fact that pebbles of the Wrekin rocks occur in them." "Scenery of England," by Lord Avebury, p. 250.

The Maps recommended for this district are, on the scale of 1 inch to 1 mile:—The New Sheet 166, with hill shading, price 1s. This Sheet gives less than three miles northwards of Church Stretton Church. To trace "The Portway" northwards the more northern map is Sheet 152. The more western map is Sheet 165.

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GEOLOGICAL MAPS.—Quarter Sheets 61 N.W. and 61 S.W. contain the greater part of the district, and 60 N.E. and 60 S.E. include the Western parts; each quarter sheet geologically coloured costs 3s.; these maps do not show the results of recent work among Cambrian and pre-Cambrian rocks of the Caradoc-Wrekin area. The Sheet 61 S.W. contains Church Stretton and its immediate surroundings within a radius of five miles north and west of Church Stretton Church; as far as Stokesay Castle in the south, and reaching to Brown Clee Hill in the south-east.

"Index Map" No. 8, geologically coloured, on the scale of 4 miles to 1 inch, embraces a very large area of country, and extends southwards to the most northern parts of Herefordshire. Its price is 4s. 6d.

Amongst books of reference we must mention a recently issued popular guide book, the official hand-book of the Church Stretton Advancement Association, under the title of "Stretton Illustrated," price 6d., edited by E. S. Cobbold, and published by L. Wilding, Shrewsbury.

Later in the afternoon, after a heavy fall of rain, the clearing showers cooled the air, and the journey home was made under a beautifully clear air for the distant views.

Members and friends who attended this meeting were:—Rev. Sir George H. Cornewall, Bart., Vice-President, Revs. C H. Binstead, C. B. Caldicott, H. M. Evill, E. J. Holloway, Canon R. J. Livingstone, H. B. D. Marshall, and H. F. St. John; Messrs. C. P. Bird, R. Clarke, T. J. Cook, Charles Fortey, G. H. Phillott, J. Probert, H. Cecil Moore, Honorary Secretary, and James B. Pilley, Assistant Secretary. Visitors—Ladies: Misses Andrews (2), Miss C. E. Baylis, Mrs. Binstead, Miss Bird, Miss Caldicott, Mrs. Chave, Miss E. Diamond, Miss Friend, Miss M. Hopton, Mrs. Lang, Miss Livingstone, Miss G. Derham Marshall, Miss Mather, Mrs. H. Cecil Moore, Miss L. Phillott, Mrs. Probert, Mrs. St. John, and Miss Maud St. John. Gentlemen: Mr. Andrews and Lieut. A. J. G. Bird, R.E.

POSTSCRIPT.—The references above given to "The Scenery of England," by the Right Hon. Lord Avebury, allude to the 1st edition. Since the above was in the Press, a 2nd edition has appeared, price 15s.; also an edition in crown octavo, practically a reprint of the considerably revised 2nd edition, and containing the same number of illustrations, price 6s.

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WATLING STREET IN HEREFORDSHIRE.

By H. Cecil Moore.

Amongst the many antiquities in the neighbourhood of Church Stretton, the nearly two dozen tumuli arranged on both sides of The Portway on the summit of the Longmynd, the reputed pre-Roman ringed enclosures, linear earthworks, and camps (described and illustrated in "Church Stretton," Vol. III., pp. 5 to 57), posts and roads of Roman and of Saxon work, the portion of the Watling Street claims more than a mere passing reference.

According to Thos. Codrington, in *Roman Roads in Britain*, 1903, page 27, we find that the first historical mention of a Roman road after Roman times is in the Treaty of Wedmore, A.D. 878, in which Watling Street is named in defining the boundary between the dominions of Alfred and Guthrum.

Watling Street seems to have become the usual designation of a Roman road. The map on page 85 of Codrington's "Roman Roads in Britain" has this name applied to numerous roads, especially in the northern counties—from Carnarvon in the west, with branches diverging and converging in all directions through Cheshire, Lancashire, Yorkshire, &c., to Northumberland, whence a road with a similar name leads into Scotland.

The date of the earliest application of this name in each district or division of the Kingdom would form a study to which hitherto too little attention has been paid. The names we find in some places of Julia Strata, Via Julia, Via Devana, Via Badonica, are probably in most cases modern.

The meaning of the name, Watling Street, has absorbed the thoughts of antiquarians for many years past. It was used by Chaucer (1379), and latinised by the forger of the "De Situ Britanniæ" under the name of Richard of Cirencester (now attributed to Bertram of the 17th century,) into Via Guethelinga (Saxon, Gwatling). In "Shropshire," by Augustus J. C. Hare (G. Allen, 1898), we read on page 164 that "Waetlinga straet" signifies "the street of the sons of Watla," Florence of Worcester calling it "Strata quam filii Watlæ regis straverunt." The attempts to identify apparently similar words without tracing their history, and without sufficient knowledge of languages, has been a source of great confusion in the subject of Romano-British topography. The results, we must admit, although ingenious, are often humorous. After many years of questioning and perplexity, we could not repress a hearty laugh when our friend, honorary member of our Club, Mr. James G. Wood, came to the rescue, as he so often has done, with the simple derivation with which we are content to abide :—Gwaith-y-Lleng—the Work of the Legion. Hence we arrive at the conclusion that the term "Watling Street" is generic, and not specific.

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With such signification we are not surprised at the term "Watling Street" being of such general distribution over various quarters of the kingdom. This leads us to request our friends to intimate to the Woolhope Club any early mention in either charter, map, terrier, or estate survey, of the term "Watling Street," the line of which we find at the present day forming the boundary of either parish or county in various localities. In our own county, Herefordshire, we find it in several instances. For 22 miles continuously Watling Street marks the north-east boundary of Warwickshire (Roman Roads, Codrington, p. 38). Our friend, honorary member of our Club, Mr. F. Haverfield, writes in the local paper, *Hereford Times*, November 7th, 1896, under the heading "The Survival of Roman Place-names":—

"The oldest reference which I know to the use of the name 'Watling Street,' in Herefordshire, is in Horsley's *Britannia Romana*, p. 388. 'The country people near Wroxeter give the name Watling Street to the way which goes through the middle of Shropshire into Herefordshire (as I apprehend) to Kenchester.' Horsley's book was published in 1732. I confess I should like older and more distinct testimony. As the road forms in some places a parish boundary, and often (I should imagine) an estate boundary, deeds, terriers, and charters should exist which would take us back far beyond 1732."

This was eight years ago, and hitherto not a single reply has been afforded us from either our Herefordshire archæologists or other residents. The request has elicited a reply from Shropshire, from a third friend and honorary member, Mr. William Phillips, of Canonbury, Shrewsbury, who writes in the *Shrewsbury Chronicle* of December 11th, 1896, as follows:—

WATLING STREET IN SHROPSHIRE.

"The suggestion of Mr. Haverfield that the application of the name Watling Street to certain Herefordshire roads may be an invention of the 17th century, imposes upon the antiquaries of that county the necessity for investigating the authority for its use. I venture to remark under the above date that the frequent occurrence of the name on the Ordnance Map of Shropshire imposes a like duty on the antiquaries of this county. Without presuming to undertake the task, I may point out that so far as the name for designating the road running east from Uriconium, still the high road to London, is concerned, it can claim at least 700 years usage. Wombridge Priory, which stood near Oakengates, founded by William de Hadley with Seburga his wife and Alen their son, about 1136, was situated in Hadley Wood, which wood is described in the Chartulary of that Priory as "Bounded on one side by a rivulet, which divided the said wood from the King's adjacent Forest; on another side, by a rivulet, called Sprung-wella-broc; on a third side, by 'Watling Street'" (Eyton, vii., 353). In a later grant (1259) to the same Priory, by Hamo le Strange, "Watelyngstret" occurs as a boundary of property. In a Charter of Edward I. (c. 1300) is defined the boundary

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of the Royal Forest of Wellington and Morfe, which also mentions "Watlingestrete." By a reference to the Chartulary of Wombridge Priory, of which abstracts have appeared in the *Transactions* of the Shropshire Archæological Society, there will be seen many instances of the use of the name in reference to the same road, which cover a distance of ten miles or more. Vol. IX., 307, 309, 332, 351, 354; Vol. XI., 325, 326, 329, 335.

"Whether the name is applied to other undoubted Roman roads in Shropshire I am not at present able to state. That which, leaving Uriconium on the south, crosses the river by a bridge over the Severn, and branches in three directions, one of which traverses the Stretton Dale to Bravinium, has many features confirming its Roman use, if not original construction; but I have seen no ancient authority for it, or any of its branches, being called "Watling Street." The last-named branch is called in ancient deeds *Bot Street*."

This name, apparently a local name for a portion of the road, seems to be connected with that of the manor of "Lee (or Lye) Botwood," which was held by the Abbey of Haughmond by subinfeudation, under the manor of Church Stretton, and lies on the course of the road.

For the course of Watling Street in the neighbourhood of Church Stretton, reference must be made to "Church Stretton," Vol. III., pp. 60 et seq., and especially to the plan, Fig. 29, Plate XVII., where it is drawn for about 12 miles, sometimes east and sometimes west of the railway line from Longnor to Stretford Bridge over the river Onny.

We are able to trace the course of Watling Street by consultation of itineraries of earlier writers or "Road-books," which give the distances between the stages on each route.

Henry of Huntington, who wrote in the first part of the 12th century, and Ranulphus Higden, Monk of Chester, who wrote about 1344, both agree generally about Watling Street and the Foss, although they differ altogether about the other Roman Roads of Hikenild (Icknild) Street and Erming Street.

The Itinerary of Richard of Cirencester, purporting to have been compiled from fragments left by a Roman general, was published by Stukeley in 1757, from a copy furnished to him from Copenhagen by Bertram. On this subject, see "Roman Roads," Codrington, 1903, page 26, who informs us that its spuriousness was demonstrated in 1869, by Professor Mayor, who declared it was "in the main from Antonine's Itinerary, the routes broken, combined, and reversed; nine-tenths of the names in Antonine re-appearing with additions from Ptolemy, the *Notitia*, the Ravenna list, the *Tabula Peutingeriana*, and from Camden's, Baxter's and Bertram's imaginations."

It is unfortunate that the Itinerary of Richard of Cirencester should have been referred to in publications by Whitaker, R. Gough,

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General Roy, Sir Richard Colt Hoare, Bennet Bishop of Cloyne, and that sites have been marked in the Ordnance Survey Maps apparently upon data in this supposed Itinerary.

The Itinerary with which I have become most familiar is "Iter Britanniarum, or that part of the Itinerary of Antoninus which relates to Britain," by the Rev. Thomas Reynolds, printed in 1799 by J. Burges, printer to the University, Cambridge. This edition, however, is unreliable and based on inferior MSS., and has led to many errors. A complete edition by Parthey and Pindar (Berlin, 1848), which has a collation of all the MSS., should be consulted by all students of the subject. It contains, moreover, additions of later date. The editors attribute the name of the writer of Antonine's Itinerary to Antoninus Caracalla, who was with his father Severus in Britain in A.D. 208.

The Catalogues of Ptolemy date from the 2nd century, the Antonine Itinerary from the 3rd, the *Notitia* from the 5th century, followed by those of Nennius and the Ravenna Geographer.

The corruption of spelling amongst the names produces a confusion worse confounded. Moreover, there are no fewer than seven stations termed "Magna."

Parts of Itinera III. and II. of Antonine constitute the well-known Watling Street from Dover through Rochester, London, St. Albans, Dunstable, High Cross, Wall, and other places, a total length of 220 miles to Wroxeter (Uriconium or Viro-conium).

From Wroxeter a southern branch crossed the Severn, and proceeding down the Severn Valley crossed Pound Brook ; thence, passing east of Pitchford, through Frodesley and Longnor Green, it ran for several miles east of the present railway line ; south of Church Stretton, near Marshbrook Station, its course lay on the western side of the railway line. Extending southwards west of the present Craven Arms Railway Station, it passed through Clungunford to Leintwardine (Bravonium),* where it enters Herefordshire, as shown on the Ordnance Survey Map, on the scale of 6 inches to 1 mile, Herefordshire, Sheet II. N.E. Parish boundaries occasionally indicate the alignment for the about thirty miles of its course from Wroxeter to Leintwardine.

The course of Watling Street in Herefordshire is shown on the following Ordnance Survey Maps, on the scale of 6 inches to one mile :— Sheet II. N.E., through Leintwardine (Bravinium of Iter XII., of Antonine), and half a mile east of Brandon Camp† ; VI. N.E. close to, and east of Wigmore Abbey ; VI. S.E., where it enters the present high road through the village of Aymestrey ; XI. N.E., where, two hundred yards south of Mortimer's Cross, it leaves the high road at the Blue Mantle Cottages and the Gospel Oak, assumes the name of Hereford

* See the excellent article by Dr. Bull on "Bravinium" (or Bravonium, according to Parthey's reading), on page 251 of *Transactions*, 1882).

† For the relative position of Brandon Camp see the Map between pages 184 and 185 of Transactions of the Woolhope Club, 1882.

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Lane, and forms the boundary between the parishes of Kingsland and Shobdon for a mile and a half; XI. S.E., east of Street Court to Eardisland Cottage; XII. S.W., crosses the river Arrow near the Corn Mill and leaves the parish of Eardisland; XIX. N.W., through the parishes of Monkland and Stretford; XIX. S.W., on the main road throughout, forming from Stretford Bridge, for two miles, the boundary between the parishes of Birley and Dilwyn, continuing as the boundary between Birley and King's Pyon; XXVI. N.W., and XXVI. S.W., through Canon Pyon parish.

On Sheet XXVI. S.W., there are no traces of any ancient road across the country by the Hermitage in Burghill* parish direct to Kenchester, 4 miles distant S.S.W. The probable course would be southwards for 2 miles to meet the *old* road from Hereford to Weobley at the Bell Inn, Tillington, five miles from Hereford, and thence in a south-westerley direction for 2 miles along the main road marked "Watling Street" on Sheet XXXIII. N.W., under the south-eastern base of the fifty-acre Camp on Credenhill† to enter the Roman staiton of Magna (Kenchester) by its eastern gate.‡

This Roman Station has been frequently referred to in the volumes of our Transactions. On page 108 *antea*, a transverse branch of an old Roman road south of Withington Station, by Lower Wilcroft, Lugg Mill, thence forming the Hereford Municipal boundary, onwards through Holmer, Huntingdon, and Stretton Sugwas to Kenchester, has been mentioned. The extension of the road from Kenchester westwards by Garnons, Staunton-on-Wye, probably along the boundary of the parishes of Winforton and Whitney, crossing the Wye near Hay, thence probably along the road called Ffordd fawr (great road) to within one mile of Brecon, where the name Ffordd fawr again occurs, represents another branch, or transverse Roman Road.

The southern extension of the ancient road from Kenchester to Abergavenny (Gobannium) is not readily traced, neither does it bear on any map the title of Watling Street. From Kenchester it passed through the meadows of the Old Weir, where it was discovered on 27th April, 1893 (see *Transactions*, 1893, page 60) buried twelve inches below the surface level, consisting of 12 inches depth of gravel, and extending to a width of 15 feet. The place where it crossed the Wye at Huff Pool is shown in the illustrations facing page 60 of *Transactions*,

* We are greatly indebted to Mr. James G. Wood for drawing our attention to a road southwards from Burghill, crossing the Wye at Hereford, over Callow Hill, past Wormelow Tump, St. Weonards, crossing the Monnow at Monmouth, through Troy Park, over the high land at Trelleck, by Shirenewton, and down the Golden Valley to the northern gate of Caerwent. In fact Mr. Wood makes this the continuation of Watling Street in Herefordshire. I am not personally acquainted with all this line of country, but am persuaded that Mr. Wood's statement will favourably stand the searchlight of public criticism.

† For an article by Dr. Bull on Credenhill Camp, see *Transactions*, 1882, page 236. See also plan of Magna facing page 241.

‡ Excavations made by Mr. Hardwick in January, 1896, exposed the foundation stones of the eastern gate, buried 18 inches below the ground level. Some of the stones exceeded 3 feet in length, and had an average thickness of 20 inches.

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1893. From Huff Pool, on Sheet XXXIII. S.W., it forms for half a mile the boundary between the parishes of Eaton Bishop and Madley; under the name in the present day of Stone Street, it extended through Eaton Bishop and Madley, forming for a total length of two miles the parish boundary; it is shown on Sheet XXXVIII. N.E., passing east of, and close to, Great Brampton House and Farm; on Sheet XXXVIII. S.E., it is not marked, although it might probably be occupied by the half mile of straight road, thence by Kerry's Gate Farm to Abbeydore, on Sheet XLIV. N.E.

On the eastern side of Abbeydore railway station an ancient road has occasionally been unearthed from a depth of 18 inches below ground level, and exposed to view. The width of this buried road is 13 feet, and its formation consists of rough unhewn stones set on edge without any kerb-stone coping as a border. *See Transactions* 1901, page 190.

From Abbeydore the southern extension would have led over Ewias Harold Common, and through the parish of Rowlestone on Sheet XLIV. S.E, entering Monmouthshire in the parishes of Llangua and Grosmont on Sheet XLIX. N.E., thence to Abergavenny

In the Itinerary of Antoninus the journey from Carmarthen to Wroxeter is given by way of Loughor, Neath, and Boverton to Caerleon, the great and long-occupied headquarters of the Roman army. The distances from Caerleon to Wroxeter are given (Ed. Parthey, p. 232) as follows:—

		Latin Name.	English Name.	Roman Miles.
From Isca (Caerleon)	to	Burrium	... Near Usk ...	9
,, Burrium	,,	Gobannium	... Abergavenny...	12
,, Gobannium	,,	Magna	.. Kenchester ...	22
,, Magna	,,	Bravonium	... Leintwardine...	24
,, Bravonium	,,	Viroconium	... Wroxeter ...	27

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Woolhope Naturalists' Field Club.

FOURTH FIELD MEETING, THURSDAY, AUGUST 20TH, 1903.

CAERWENT.

The Romano-British City of Venta Silurum, Caerwent, was visited by the members of the Club in 1895. See *Transactions* for that year, pages 76 to 85. The visit to-day, Thursday, August 20th, 1903, was prompted by reports of the successful results of recent excavations conducted over the grounds of the old city since the year 1900.

Leaving Hereford at 9-50, travelling viâ Grange Court, the party reached Chepstow about mid-day, where carriages from the Beaufort Arms were awaiting them, in which they took their seats for the drive of five miles to Caerwent (upon which some of the objects en route are described in *Transactions*, 1895, page 76), over good main roads, but sufficiently hilly as to have required, for the guidance of the cyclist, no less than three signal posts marked "dangerous for cyclists." At one o'clock the ancient rectangular walled town, in the present day a little village, was entered by its eastern gate.

The Members left their own county, Herefordshire, behind them when, shortly after passing Mitcheldean Road Station, their emergence out of a short tunnel brought them into the head of the Longhope Valley in Gloucestershire. The railway journey from Grange Court Junction to Chepstow introduces us to many a peep of the River Severn, as the line runs along its right bank for twenty miles. The notes prepared for the ephemeral use of the visitors by Mr. James G. Wood, are of sufficient value to find a permanent place in the pages of the *Transactions* of the Club.

POINTS OF INTEREST ON THE ROUTE BY THE RAILWAY FROM GRANGE COURT JUNCTION TO CHEPSTOW, AND THENCE BY MAIN ROAD TO CAERWENT.

BY JAMES G. WOOD, M.A., LL.B., F.G.S., &c.

"Right" and "left" mean respectively "on the right-hand or N.W. side," and "on the left-hand or S.E. side" of the traveller from Grange Court, facing the engine.

At one mile from the Junction, left, is Westbury-on-Severn Church, with a detached steeple; one of the few instances in Gloucestershire, though not uncommon in Herefordshire; the Church Tower at Berkeley is detached.

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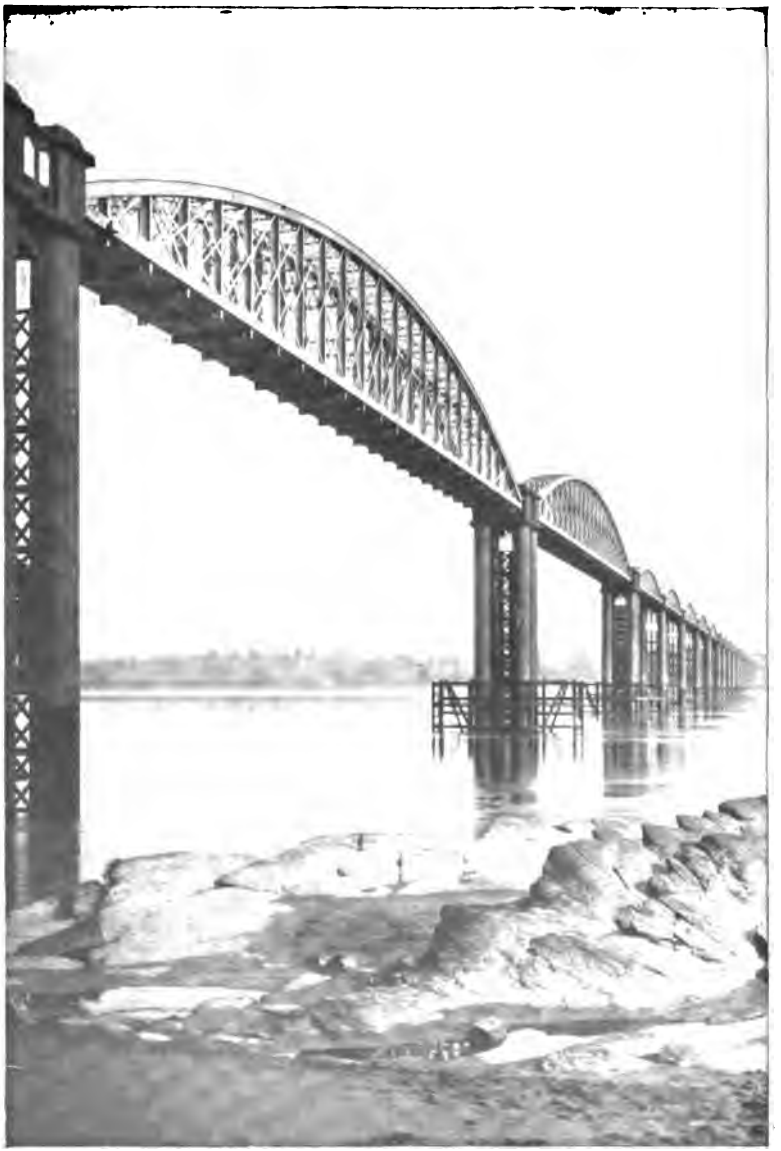

THE SEVERN BRIDGE CROSSING THE RIVER FROM LYDNEY TO SHARPNESS.
THE TWO NEAREST SPANS ARE EACH 327 FEET.

No. 10. To face page 167. *Photo. by F. H. Worsley-Benison.*

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Near the Church is seen Garden Cliff over-hanging Severn, presenting a fine section in New Red, Rhætic, and Lias Beds.

Passing Newnham Station and a short tunnel (New Red Sandstone) we look back, left, to Newnham Church and ferry. This ferry is in the line of what the writer has traced as the Roman road connecting Cirencester with Ariconium, by Minchinhampton Common, Cainscross, near Stroud, Newnham Ferry, Little Dean Grange, Cinderford, and Hope Mansel.

As we pass Bullo Pill Sidings we see, over Severn, Arlingham and Fretherne Churches—the latter place, the more distant of the two, is the accepted site of the battle of Fethanlea (A.D. 584) between Ceawlin and the Britons; after which "Ceawlin took many towns and countless booty, and wrathful he thence returned to his own" (Saxon Chronicle). This raid, I infer, was across Severn into the Forest district, and accounts for the total destruction of the Roman Settlements between the Wye and Severn, such as Ariconium and the unnamed town near Lydney, and also for the almost entire extinction there of British place-names. The district seems to have laid waste for a century, and the British never again established themselves east of the Wye.

We now, as in the next cutting we lose sight of the Severn, run into the Lower Lias, which continues with us past Awre Junction and until, at Hagloe, we come out on to the bank of the Severn. Here we immediately exchange it for the lower beds of the Old Red; in fact, in half-a-mile, at the Milkmaid Rock at low water, the upper Ludlow Shale is exposed. This sudden change is due to the Great Malvern to Tortworth fault, which is crossed by the Ledbury-Gloucester Railway near Newent, and, having skirted May Hill, is crossed by the Ross and Gloucester Railway between Longhope and the Grange.

We now pass under the Severn bridge, of which the two spans nearest to us are each 327 feet, a size hardly to be appreciated unless we are fortunate enough to see a train passing over like a small fly in a great web.

Opposite are seen Sharpness Docks, backed by Stinchcombe Hill, Uley Bury, and Tyndale Monument on Nibley Green.

As we leave Lydney, one of the outlets of Dean Forest, we see on the rising ground (right) Mr. Bathurst's new house in Lydney Park. In this park has been unearthed a Roman town, the existence of which was wholly unknown, no trace of its name having come down to us, until the discoveries of the late Mr. Bathurst, whose valuable account of it was published, after his death, in 1879.

That the existence of it, however, though ruined, was known to our Saxon forefathers I infer from the name of the village at the foot of the park, Aylburton, i.e., "eald-burh-tun"—"the vill by the old walled town," reminding us of such names as Aylton and Alton in Hereford-

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shire, on the lines of Roman roads (see *Transactions of the Woolhope Club*, 1901, p. 207, note). Similarly, in Yorkshire, the Roman Isurium (i.e., the town below the Ure) was called by the Saxons "eald-burh," now Aldborough, on the great northern Watling Street.

We are now running parallel to the Roman road connecting Newnham passage and the Forest with Caerwent, which became the main road into South Wales.

Just before Woolaston (Odolaveston of Domesday) we cross the Cone Brook, i.e., "Cyne-Broc" or King's Brook, being in the 13th century the boundary between what then remained as the Dean Forest in the hands of the King, and that portion of it which had, including Tidenham Chase (the high land on right), become part of the Lordship of Striguil. Dean Forest before then had extended nearly to Chepstow.

In another three miles, as we begin to leave the lowlands beside Severn, we see, right, Tidenham Church on a bank about a quarter-of a-mile from the railway. The Manor of Tidenham (Dyddanhame), bounded on the West by the Wye, and on the East by Severn, with a length of seven miles, was, in 956, given by King Edwy to the Abbey of Bath. Between 1052 and 1066 it was leased by the Abbey to Archbishop Stigand for life. On the Norman Conquest it was taken out of Stigand's hands by Fitz Osbern, the builder of Chepstow Castle, and the founder of the Striguil Lordship (see Gloucestershire Domesday). On his son's rebellion, it, as well as the Lordship, reverted to the Crown, but they were reunited subsequently in the hands of the Clares.

Immediately on passing Tidenham Church, we notice coming in on our right, above us, the Wye Valley Railway from Monmouth and Tintern to join us in the Tidenham Cutting. This cutting 1¼ mile long, has much geological interest. We enter it through a steep outcrop of Carboniferous Limestone, being, in fact, the continuation of the eastern border of the Forest basin, which here turns sharply to the east, across Severn towards Thornbury, to include the North-Bristol coal-field, and has been cut right through by the Severn Valley. Almost immediately we run into the New Red, to be succeeded by the Dolomitic Conglomerate at the Wye Valley Junction Signal Box; immediately after which the order is reversed, and we finally run out through an escarpment of Carboniferous Limestone with an eastward dip, on to Brunel's Bridge (1846-1853) over the Wye.

Crossing the bridge we see, right, Chepstow Castle, the "caput" of the Lordship of Striguil, commenced by Fitz Osbern, 1066, and continued and finished by the Earls of Pembroke and Norfolk in the 12th and 13th centuries. This and the Church having been previously visited by the Woolhope Club, do not require further attention. (See *Transactions of the Woolhope Club*, Vol. 1892, pp. 316 seq., in which are also papers on the Wye Tide, now proved to approximate to, but not exceed, 50 feet).

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Leaving now the line of railway (which proceeds along low grounds by the Severn, within the parish of Mathern (Merhir Teuderic), and Portskewett, where the gigantic pumping works of the Severn Tunnel are fixed, to the Severn Tunnel Junction), we take seats for the carriage route along the main road to Caerwent.

As we leave Chepstow Station we see crowning the slopes on our left the "Portwalls" which enclosed the town, forming the chord of the arc traversed by the river; in fact the bend ("Ystraigyl" in Welsh) which in the corrupted forms of Estrighoiel (Domesday) and Striguil (in Early Charters) gave the name adopted for the Norman town and castle.

At the upper end of High Street we pass through the Town Gate, piercing the Port Walls, which here are obscured by later buildings on either side. The gate I attribute to a period about Henry VII., from a reference in Manor Documents to "the new gate." The original gate, I apprehend, was further to the north.

In the case of most walled towns the date of the walls is known by the record of the King's License for their erection. But the Lord of Striguil, as a Lordship Marcher, had all *jura regalia*, and so no license was required, and we are without any certain guide to the date of the Port Walls. I assign them to the period of the Marshalls in the first half of the 13th Century.

It may seem odd that the street to the west, which we take, is the Moor Street, while that to the north is the Welsh Street. The explanation is that the former leads to the low grounds on the Severn side, below Caldicot and Caerwent, known from early times as "The Moors," while the other leads to Usk and Penterry, which in the 13th Century were the "Welsheries" of the Striguil Lordship.

We leave the town by the steep ascent of Mount Pleasant, on which, if time allows and atmosphere favours, we shall linger to examine the prospect.

On the left the woods of Piercefield Park and the Wyndcliff overhang the gorge of the Wye; the long ridge of Tidenham Chase comes next, forming the watershed between the two valleys, with the smoke of the Forest mines in the distance. Over the tubular bridge we should see the towers of Berkeley, and beyond, the Severn Bridge and Robin Hood's Hill, near Gloucester.

In the foreground on a ridge below us we have another view of the Port Walls, here cut through by the railway, but extending to the river.

Beyond the Port Walls we see, across the Wye, the final termination of Offa's Dyke. Starting at the end of the limestone cliffs, near some poplar trees, it strikes across to the bank of Severn, forming the boundary there of Sedbury Park, the former residence of the late George Ormerod, F.S.A., the historian of Cheshire, and now the residence of Sir William Marling, Bart.

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To the right of the Dyke is the peninsula of Beachley, formed by the two rivers. The Dyke is mentioned in the Edwy Charter above referred to, and this peninsula outside the Dyke is there called the "utan hamme," or "outer manor," and part of this is stated to be "under lease to the Welsh shipmen." My explanation of this is that here was a ferry across the Wye worked by Welsh boatmen. This is confirmed by Bulls of Pope Honorius II. (A.D. 1128-9), entered in the Liber Llandavensis (pp. 32-44, Evans' edition), from which it appears that on the Monmouthshire side of the Wye, just above the river's mouth, was a place called "Tref iridiouen" (or, as it would be written in modern Welsh, "Tref y rhyd yr ouen), or "The Village of Owen's ferry"—and is further confirmed by the fact that the rock we now see jutting into the river on the opposite bank is to this day called Hewan's or Euan's Rock. There was also, somewhere above the Hardwick Rocks, nearer us, a Church of St. Audoen (Owen), which I identify with Lamecare, one of the Hardwicks mentioned in Domesday, and hitherto supposed to be Llanfair Discoed, near Caerwent. "Lamecare" I take to be a mistake for Llanygaer, or "The Church by the Caer" or camp, which is on the summit of the Hardwick Rocks. The position of St. Audoen's is inferred from statements in the Liber Llandavensis.

Just clear of the Wye mouth we see, left, on a low rock (an island after half tide), the ruins of a small Chapel, the history of which is quite unknown, and even its name is uncertain. It is generally called St. Tecla's, in ancient documents it appears as Treacle or Tyriacle, St. Tiriacus, etc. It had, apparently, been abandoned before the 16th century. It, however, gave its name to Beachley, which was formerly Betteslegh and Bettusleigh, corrupted from Bettwslech, i.e., "The Chapel of the Flat Rock."

The red cliff in the distance across the Severn is the Aust Cliff, well known to geologists for its bone bed. Aust has been, quite wrongly, identified with the "Trajectus" in the Antonine Iter XIV. (which is really on the river Boyd at Bitton, near Bath), and hence it, unfortunately, in many maps and guide books, is marked as "Trajectus Augusti," a name which exists nowhere, and has no authority. With equally little reason it has been suggested as the site of St. Augustine's Oak. The cliff appears in Domesday and Tintern Documents as Austreclive, that is, East Cliff, its counterpart on the West of Severn being below Sedbury Park, so there is no need of speculation as to the origin of the name.

Similar speculations as to Oyster Hill, near Hereford, connecting it with Ostorius, are equally unfortunate. That is only another form of Austrehyll, that ridge being the counterpart of the western ridge of the Black Mountains, and the name is, in fact, a Saxon translation of the Celtic "ar-cen" (of the same meaning), which is the origin of

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CRICK MANOR HOUSE.

No. 11. To face page 171.

Photo. by F. H. Worsley-Benison.

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Erging and Archenfield.* We have, similarly, Oystermouth, near Swansea.

There is no trace of a ferry at Aust before the 12th century, and no road which can be identified as a Roman road leads to Aust. So the idea of a Roman crossing is quite inadmissible.

At the top of the hill, where we meet the telegraph wires, we strike the line of the Roman road connecting Caerwent with the Dean Forest. It is important to remember that this road did not pass through Chepstow, but crossed the Wye about half a mile above the Castle, and then, by Crossway Green and St. Kinsmark, struck across to the point we have now reachd. This part is in the Liber Llandavensis called the "lata via" and "alta via." We follow it now for about a mile.

Passing the village of Pwllmeyrick (1½ miles), and at the foot of a steep hill, we cross the Pwllmeyrick Brook, or Pwll Meurig, now an attenuated stream, which once drove mills mentioned in Domesday, and several paper mills in the writer's recollection.

It falls into Severn by the estuary of St. Pierre Pill, to be elsewhere dealt with. It derives its name from Meurig, son of St. Tewdrig, king of this district, who, fatally wounded in battle with the Saxons at Tintern Ford, died on the site of, and lies buried in, the Church on our left of the parish which we are now traversing, Mathern, or Merthir Tewdrig, and was given to the Church of Llandaff by Meurig in his memory.

Soon after crossing the bridge we diverge, to the left, from the line of the Roman way, which continues straight on through the Broadwell Valley to meet us again at Crick.

We next pass the lodge entrance of the Deer Park of St. Pierre (C. E. Lewis, Esq.). This is the mansion of the ancient Manor of Portskewet (Porth-is-coed, or the Harbour below the wood, the old name of St. Pierre Pill), formerly held by subinfeudation under the Lords of Striguil; but on the partition of the Lordship among the Marshall heiresses, annexed to the Lordship of Usk, carved out of the greater Lordship.

At Crick (4 miles) we rejoin the Roman Road coming in on our right, and we pass an ancient manor house (on our right also) which once sheltered Charles I. on his wanderings. The Manor of Crick was also a subinfeudation under the Lordship of Striguil, and in the 13th and 14th centuries held by the family of Deneford or Derneford, who appear frequently in Striguil and Tintern Charters; and of whom Sir William was Commissioner for the Dean Forest Survey of 1281.

* The derivation here suggested for Archenfield has its confirmation by analogy in the North of England. The high level pass, between the upper courses of the Yore and the Eden, through which the Midland Railway passes to Carlisle, is the western boundary of Yorkshire. On its west the heights of Ravenstonedale and Kirby Stephen form the West-moor-land, while to the east rise the heights of Arkengarth, or "the escarpment of the eastern ridge."

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Another mile of the Roman way brings us through its eastern gate within the walls of Venta Silurum, where the remains of the Roman curbstone and pavement at once manifest themselves in the main road.

CAERWENT.

As previously stated, we entered Caerwent by its eastern gate. A few hundred yards brought us to the Church, over which we were conducted by the Vicar, Rev. Canon W. A. Downing. Its architectural features were known to the majority of the party who had the benefits of their demonstration by Mr. F. R. Kempson, F.R.I.B.A., as given in the Transactions of the Club, 1895, page 83.

On leaving the churchyard, we were met by Messrs. Alfred E. Hudd, F.S.A., and A. Trice Martin, F.S.A., head master of Bath Grammar School, members of the Caerwent Exploration Committee, who at once assumed their charge as directors of our party over the excavations.

Opposite the northern entrance to the churchyard a road, at right angles to the main east to west street of the village towards Caerleon and Newport, leads northwards, and an area of open ground, called the village green, at the junction of the three ways, was occupied by some massive masonry, about three feet high, which had been excavated from a depth of about five feet, and re-constructed, in memoriam, over its original place of burial for a period of fifteen or sixteen centuries. At its south-eastern angle an important inscribed stone was unearthed, which we inspected in the Museum towards which our directors conducted us.

The Museum is a temporary storehouse established by the Caerwent Exploration Fund, of which Lord Tredegar is president, for the collection, classification, and exhibition of ancient "finds" from the excavations. These have been systematically arranged, and consist of an assortment of miscellaneous articles, including coins (principally "small brass" and "minims"), bronze objects of apparel and ornament, fibulæ, bangles, bracelets, spindle whorls, bone pins, counters, numerous specimens of the "stylus" used for writing, mortars, querns, urns, tesseræ, tesselated pavements, fragmentary examples of Samian ware, some of these richly decorated, some Kimmeridge shale, iron collars used in forming the junction of wooden pipes, as evidenced in traces of the wood within the collar, bones of animals, a small tomb for an infant, specimens of slab tiling, and portions of a hypocaust *in situ* discovered under the roof of the Museum, with additional pillars of another hypocaust removed from elsewhere, the head of a pagan god, a bronze mirror-back, and other objects of bronze and pottery in profusion, some very good coloured enamel and other *olla podrida*.

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Occupying a conspicuous position in the museum stands, upon a basement, an inscribed stone, which, historically, is the most valuable of all the finds, from the fact that it is a memorial stone indicating a connection of some officer of esteem and distinction at Caerwent with the 2nd Legion and with the "civitas Silurum": its date probably may not be later than A.D. 280.

This stone, three feet high, with panelled sides, was discovered at a depth of five feet below the present ground level, at the south-eastern angle of the mass of masonry, already alluded to, in the Village Green, the small open space at the cross roads near the entrance to the churchyard. It was lying upon the eastern side of a quadrangular mass of masonry formed of huge stones, all of which has been raised and reconstructed to the height of three feet covering the site of its original position.

Unfortunately the inscription upon the stone is illegible over the name of the officer commemorated; the remainder is sufficiently well preserved to indicate that he was a commander of the 2nd Legion, governor of the senatorial province of Gallia Narbonensis, and legate of the imperial province of Gallia Lugudunensis; and that Caerwent was the centre of the tribal organisation under which the Silures lived in Roman times.

The inscription may be rendered as follows:—" . . . . . leg(ato) leg(ionis) Aug(ustae) proconsul(i) provinc(iae) Narbonensis leg(ato) Aug(usti) pr(o)pr(œtore) provi(nciae) Lugudunen(sis) ex decreto ordinis respub(lica) civit(atis) Silurum."

Two fine examples of Roman Mosaic floors, discovered in House No. VII, in the south-western portion of the ancient city, have recently been removed to the Museum at Newport.

As regards the coins found at Caerwent, they have not yet been catalogued. There have been numerous previous finds of which a record is supplied in a paper by Mr. Alfred E. Hudd, F.S.A, in the proceedings of the Clifton Antiquarian Club, Vol. 5, p. 170. They are mostly in a poor condition, and principally "small brass" and "minims," dating from Julius Cæsar to Honorius (B.C. 44 to A.D. 423), by far the majority being of the later Empire. In the aggregate up to the present date probably about ten thousand coins have been discovered.

Notes upon the bones and animal remains are given in "Excavations at Caerwent," etc., by A. Martin, F.S.A., Thomas Ashby, jun., F.S A, and Alfred E. Hudd, F.S.A., in *Archæologia* (1901), Vol. 57.

Upon the walls of the museum are hung numerous plans, and coloured illustrations of the decorated walls, and the mosaic pavements discovered in the houses unearthed in the south-western quarter of the village. These excavations have all been covered up, the beautifully coloured mosaic pavements having been removed to the Corporation Museum at Newport.

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Mr. King, to whom we are indebted for the plans and drawings, is a resident official of the Exploration Fund and curator of the museum. With the aid of some of his diagrams upon a large scale, Mr. Martin explained to us the results of the last four or five years' exploration.

The ground plan of Caerwent is a rectangle of about 500 yards (E. to W.) and 400 yards (N. to S.)—some remains of the east and west gates still exist. The present highway to Newport, eleven miles to the west, follows for the first eight miles the ancient road from Caerwent to Caerleon. Other old roads north and south have been brought to light. The town was walled, and on the south side the walls are preserved in places to the height of 20 feet, with a thickness of 10½ ft.

In the south-western part of the village the foundations of eight houses have been opened, two of which are very large houses. House No 2 is very extensive, and contains 52 rooms, embracing an internal courtyard, measuring 85, 87, 49, and 46 feet along its north, south, east, and west sides respectively; the external dimensions of the whole house measure 118 feet north to south, by 250 feet east to west.

House No. 7 is another large house of the same enclosed courtyard type, with rooms upon each of its four sides; an aggregate of 33 rooms. The courtyard measures 60 feet 9 inches by 36 feet 9 inches, the average width of the corridors being 5 feet 9 inches. Details and measurements of all the rooms are given in *Archæologia* 1902, Vol. 58: the mosaic pavements found in rooms Nos. 6 and 7 of this house are there represented, as is also the richly coloured north wall of one of the rooms.

In some cases the painted plaster upon the walls was found *in situ*, and in a good state of preservation.

Mr. Martin pointed out that the plans of the above houses differed from those unearthed at Silchester in the fact of the central courtyard being enclosed upon each of its four sides, whereas at Silchester rooms have, up to the present date, been found upon only three sides of the courtyard.

At the present time excavations are being carried out upon ground purchased by Lord Tredegar in the north-eastern part of the village. Here an amphitheatre, oval in plan, with its longest diameter about 150 feet, is exposed. The rooms of the houses unearthed here are on a smaller scale than those in the south-western part. An extensive hypocaust is on view here; it was observed that the pillars were constructed of local stone, except in the neighbourhood of the furnace, where they would be subjected to greater heat, and were constructed of baked tiles. Three ancient wells have been opened and cleaned out, the water supply therefrom being made available for daily use.

The most interesting discovery in this quarter of the village is the North gate of the ancient city. As a general rule the foundations of the ancient buildings are found at a depth of from three feet to five

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feet below the existing ground level, but the accumulation of debris and apparently undisturbed virgin soil along the interior of the north wall amounts in places to 9 or 10 feet in depth. The depth, however, near the wall may probably be accounted for by the existence of an earthen embankment or rampart, sufficiently elevated to allow the defenders to look over the wall as a parapet, and use their projectiles therefrom.

The North*gate was completely buried; the arch had fallen, but sufficient of the springing has been discovered to enable the outline of a semi-circular arch to be made out. The capitals of the columns are well represented, and at their base upon each side are the pivot sockets *in situ* for the gates. Beyond the gate an excavation has been made which demonstrates the section of the outer ditch, or moat, forming an additional defensive character to the fortified walled city.

Caerwent is mentioned as Venta Silurum in the Antonine Itinerary, and by the Geographer of Ravenna. In the Itinerary it is a station upon the Roman road from London *viâ* Bath to South Wales.

Mr. T. Ashby, junior, in a paper read before the British Association at Southport, on Friday, Sept. 11th, on the Excavations at Caerwent, as reported in *The Times* of Sept. 14th, 1903, states that the city appeared, at one period of its existence at any rate, to have been divided into 20 *insulæ*. He records that within the wall, and parallel to it, a mound of hard clay had been discovered in many places, which was believed to have been the original fortification of the city.

The late Mr. John Edward Lee, author of *Isca Silurum*, held the opinion that there was a great tile-yard at Caerwent. He exhibited to our members on their visit to Caerleon, on May 20th, 1875, see *Transactions* 1875, page 119, the impressions of nailed sandals, probably of a Roman soldier sixteen hundred years ago, upon a dried brick from Caerwent; also, upon a large tile from the same place, the scribbling of the name Bellicianus.

Subsequent to the times of the Romans the important position of this district was recognised by the erection of numerous defensive posts in the neighbourhood. The sites of several castles occupy the ground within the radius of a march of ten miles, these are: Caldicot, Burness, Pencoed, Penhow, Llanvair, Llangibby, Usk, Cas Troggy, Dinham, and Chepstow. A well-defined camp in Llan-melin wood, with an outpost 400 yards on its north-east, occupies an elevation of 335 feet at the distance of little more than one mile north of Caerwent. Numerous small camps are interspersed in the vicinity—the most important of which is at Sudbrook, or Southbrook Point, partly swallowed up by the

*Whilst this volume is in the press, August, 1904, the South gate has been brought to light, and is said to form an interesting parallel to the North gate. Another inscribed stone has been discovered, which is described in the *Hereford Times*, of August 27th, under the signature of T. Ashby, junior, as "a dedication to Mars, by M. Nonius Romanus."
In *The Times*, August 25th, 1904, page 4, column 6, the date of the inscription is given A.D. 152.

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tides and waves of the Severn Channel, occupied in the present day by the Severn Tunnel Pumping Works, and within a few yards of being undermined by the Severn Tunnel, which runs a little to its west.

We look forward to the results of further excavations in Caerwent being published in the proceedings of the Clifton Antiquarian Society, or in *Archæologia*. The work must not be allowed to be discontinued for want of financial support. The Woolhope Club has forwarded a small donation of £2 2s. Subscriptions should be sent to the Honorary Secretary of the Caerwent Exploration Fund, Mr. A. Trice Martin, F.S.A., Bath College, Bath.

For publications up to date the following references are given:—

Excavations at Caerwent, by Thos. Ashby, Alfred E. Hudd and A. T. Martin, in 1899—1900. *Archæologia*, Vols. 57 and 58, with numerous plans. N.B.—Reprints can be purchased in the Temporary Museum at Caerwent.

The Proceedings of the Clifton Antiquarian Society. (On view in the Woolhope Club Library, Hereford).

Vol. 1, 1885, pp. 58 to 66. "Roman Road between Bath and Caerwent," by A. T. Martin, F.S.A., &c.

Vol. 3, 1894, pp. 41 to 55, "Caerwent," with plans, by A. T. Martin, F.S.A.

Vol. 4, 1899, pp. 236 to 240. "Report on Excavations at Caerwent," by A. T. Martin, F.S.A.

Vol. 5, 1901 to 1902. Part xiv., pp. 170 to 181. "Roman Coins from Caerwent," by Alfred E. Hudd, F.S.A.

Transactions of the Woolhope Club, 1895, pp. 76 to 85. Notes on Caerwent, by James Davies; and on Caerwent Church, by F. R. Kempson.

At 3-30 p.m., after an exploration over the excavations which was somewhat interrupted by rain, the members resumed their seats in the carriages for the return journey to Chepstow under persistent and heavy downpours.

At 4-30 provisions and tea were partaken of at the Beaufort Arms. At 5-31 the members re-embarked in the return train to Hereford.

Time did not permit reading of the following papers which had been prepared for the meeting:—

"The Mezozoic Rocks around Chepstow," by L. Richardson, F.G.S.

"The Ancient Harbours of Gwent Iscoed or South Monmouthshire, and the Roman Passage thence," by James G. Wood, M.A., F.G.S., F.S.A.

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"Primary Roman Roads into Herefordshire and Monmouthshire, and the Crossings of Severn," by James G. Wood, M.A., F.G.S., F.S.A.

"The Place-name of Caerwent," by James G. Wood, M.A. F.G.S., F.S.A.

The Ordnance Survey Maps for the district are as follows :—

On the scale of 1 inch to 1 mile. Sheet 250, price 1/-

On the scale of 6 inches to 1 mile. Sheet 30. The whole sheet, price 2/6, is required because Caerwent is in the centre.

Geological Survey Map. Sheet 35, price 8/6.

Here follows a list of members who were present :—The President, Mr. H. Southall, The Very Rev. The Hon. J. W. Leigh, Revs. H. M. Evill, P. H. Fernandez, C. Harington, R. Harington, A. W. Horton, A. G. Jones, Preb. W. H. Lambert, R. Hyett Warner, and Preb. E. H. Winnington Ingram. Dr. Scudamore Powell. Messrs. W. H. Apperley, Philip Baylis, S. H. Bickham, T. Blashill, R. Clarke, T. J. Cook, E. A. Gowring, C. J. Lilwall, J. W. Lloyd, H. J. Marshall, T. W. Morris, G. W. Phillott, John Riley, H. Cecil Moore, Hon. Secretary, and James B. Pilley, Assistant Secretary.

Visitors—Messrs. J. D. Havard, T. K. Horton, from South America, A. E. A. Jones, A. Jeffreys, F. Morris, L. J. C. Riley, O. C. H. Riley, and Mr. L. Richardson, F.G.S., Honorary Assistant Secretary of the Cotteswold Naturalists' Field Club.

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ON THE MESOZOIC ROCKS AROUND CHEPSTOW.

By L. Richardson, F.G.S.

PART I.—The Historical Geology.

During the time in which the Upper Keuper deposits were being formed the greater portion of England lay submerged beneath the waters of an inland sea, much resembling the Caspian of the present day. Portion of the western coast-line of that sea ran approximately north-eastward and south-westward of the locality now indicated by the town of Chepstow. If man had trod the high ground in this neighbourhood at that early period, and had looked eastwards, instead of the dull grey waters of the Severn estuary and the richly wooded and undulating country on the farther shore, he would have seen deep blue waters, broken in the distance by many islands—a veritable archipelago. And when the lowest deposits of the Upper Keuper Stage were being accumulated, islands were yet more numerous: three at least were present in the area between Tidenham and Chepstow. The coast-line which stretched south-westwards was much broken by ramifying creeks; on the brinks of some of these we can picture large boulders resting, whilst banked against the base of the cliffs were thick accumulations of mainly angular débris. Most of these creeks, however, appear to have had somewhat steep cliffs in the early Upper Keuper age, rising almost precipitously from the water-level. North-eastwards the coast-line was less iron-bound, for the cliffs were of Old Red Sandstone, and we might accordingly suppose that sandy tracts extended along their base. Hilly and arid lands lay to the west, for but little vegetation could survive under the scorching rays of that brilliant sun. In late Keuper times such climatic conditions had probably produced a marked difference in the level of the water in the inland sea. Concerning the marginal deposit of that sea, or the "Dolomitic Conglomerate" as it is usually denominated, much has been written, and it would appear that it was accumulated under a variety of conditions. At, or near the close of, the Carboniferous period we know that great earth-movements affected the Palæozoic rocks: movements which bent the strata into folds and caused anticlinal flexures to alternate with synclinal, "the folds being sometimes shortened to resemble elongated domes or ellipsoidal basins." "It was now that the Silurian strata west of the Malverns were contorted, the anticlinal domes of Woolhope and May Hill were ridged up, and the Coal Measures of Bristol and the Forest of Dean bent into basin-like depressions."*

Now during that vast period which elapsed between the time when Palæozoic rocks were thus affected by earth-pressures, and when the land was again encroached upon by the waters, the neighbourhood

* Proc. Cotteswold Nat. F.C., vol. xiv. (1901), p. 49.

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of Chepstow suffered much from sub-aërial denudation. The rock disintegrated from the cliffs would fall into the hollows, and give rise to screes, such as exist on the south-eastern side of Wastwater. It is worthy of note that screes of the present day often strew slopes and hill-sides where regular cliffs are absent, but if the accumulations are at all extensive it shows that there were cliffs of considerable height there at one time. Such deposits were accumulating throughout the Permian period, the Bunter epoch, and the Lower and Upper (*pars*) Keuper ages. Thus there is the possibility of finding in the "Dolomitic Conglomerate" representatives of a land fauna with the facies of species that existed in Permian and Triassic times. The greater mass of the deposit would have fallen when the cliffs were steepest, in early Permian times; but as time went on these became less precipitous, until in Upper Keuper times the land surface, to use Prof. T. G. Bonney's expression, would have been "a region of craggy downs, rather than of great hills with precipitous flanks." The first masses which fell would remain at the base of the cliffs, whether they were great or small fragments. As the scree was added to, however, the larger masses—as pointed out by Mr. A. Strahan—would travel farther; but it should also be mentioned that as the cliffs became less steep it is probable that the masses of rock detached would be proportionately smaller. Mr. Strahan, however, seemed to see in the fact that as the constituents of the "Dolomitic Conglomerate" receded from their source they became smaller, a point adverse to accepting the theory of the mainly sub-aërial origin of the deposit. But as the cliffs were denuded, would not the fragments, generally speaking, become smaller? Again, whilst those large masses which fell early in the Permian period became quickly covered up under smaller fragments, those which fell—say in early Keuper times—would travel down the scree, possibly into the encroaching waters or to rest upon the shore unprotected against atmospheric vicissitudes.

Slowly the area sank, and the late Keuper sea encroached yet more upon the Palæozoic land. But before the Rhaetic ocean gained access to the British inland sea it seems probable that, as Sir A. Ramsay and Mr. A. Jukes-Browne have pointed out, the Keuper sea was greatly reduced by evaporation, "and was perhaps several hundred feet below that of the sea outside," so that when the dividing barrier was submerged, the sea-water would rapidly invade the lake-basins and fill them up to a common level. After working the Rhaetic and Keuper beds for several years, I have come to the same concluson, namely, that the Keuper sea was greatly reduced by evaporation, and that perhaps several shallow lakes—surrounded by low-lying tracts of marl, which had once been formed under the waters of the more extensive sea—alone remained. The uncovered tracts of marl would dry and crack under the rays of the sun, and it would appear that they were also somewhat affected by earth-movements. Continued depression in the south-east at length gave the Rhaetic ocean access to the British area, and the

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waters entered the shallow lakes and spread over the greater portion of the Keuper flats. When the Rhaetic beds were deposited a non-sequence would result, and it would be in those small lakes where deposition was going on at the time the Rhaetic ocean gained access to the British area that the sequence would be complete, and in such cases we might expect black sediment to mix with that of the "Tea-green Marls" (Upper Keuper). At Sedbury Cliff, near Chepstow, masses of "Tea-green Marls" occur in the Rhaetic Bone-bed. Here, then, we have evidence of the coast-line in this particular locality at the time when the Bone-bed was in the course of formation. On the opposite side of the Severn at Aust Cliff, similar phenomena can be studied. At Sedbury Cliff, as is usually the case, the line of demarcation between the Keuper and Rhaetic series is sharply defined, and the organic contents of the Rhaetic beds show that such was the case from a palæontological standpoint also. And in yet more striking contrast to the extreme scarcity of life in the briny waters of the Keuper sea and lakes, was that which teemed in the waters in the early part of the Liassic epoch, and over which the *Ichthyosaurus* and *Plesiosaurus* exercised a reign of terror.

PART II.—Stratigraphical Details.

Turning now to the stratigraphical details upon which the description of the physiographical features of the several epochs mentioned above is based, attention may be first directed to the Keuper deposits.

Keuper Rocks.—These deposits in the Beachley peninsula indicate by their undulations and slight dislocations that they have been subjected to the strains of many earth-movements. At Sedbury Cliff the Keuper beds have a very slight synclinal arrangement, and owing to a greater elevation in the north-west a prevalent dip to the south-south east (not more than 3 degrees) has resulted. The authors of that classic essay entitled "Observations on the South-western Coal District of England," have recorded that "At Chapel Rock, the promontory close to the Old Passage-house at the mouth of the Wye, an interesting section is displayed of the junction of the conglomerate with the mountain limestone. In the low cliff, which extends half-a-mile to the north of the Passage-house, the conglomerate passes into a homogeneous rock of dolomite, which at the lofty precipice of Annard's cliff [*i.e.*, Sedbury Cliff]* is covered by the superstrata of red marl and lias. At Tidenham the conglomerate reposes on the basset edges of mountain limestone; at Wollaston upon old red sandstone. Small flats and shoals, composed of the conglomerate and dolomitic sandstone, occur in the bed of the river for 4 or 5 miles above the Passage-house; these rocks have of late [1824] been taken in great quantities from the river near Tidenham, for building the new bridge at Chepstow."†

Proceeding towards the southern end of the promontory along the shore from Sedbury Cliff older deposits are successively entered upon.

† The ancient name in the Charters, and in a map of the 18th century, was Potwell Cliff.
* Trans. Geol. Soc. ser. 2, vol. i., p. 297.

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Where the low cliff commences red marl with greenish patches—generally vertical—is exposed. Near the wall a zone of laminated greenish marl with sandy layers makes its appearance; whilst a little farther on is evidence of a small disturbance, whereby layers of greenish yellow marlstone with red blotches, and containing small pebbles of quartz, have been elevated so as to dip at a considerable angle towards the north. Except for minor undulations, the beds now become fairly regular, but at a spot where the deposits have been much decolourised there is a fault: on the one side they dip northwards, on the other to the south-south west. This faulting, however, has not produced extensive disturbances, for, a few yards farther on, the strata dip to the north again. The Carboniferous Limestone has been stripped of its covering of Keuper rocks a short distance beyond, and gives rise to a craggy shore. The cliff also shows evidence of a fault On the north side, "Dolomitic Conglomerate" is seen to be succeeded by hard red and somewhat sandy rocks with veins and geodes mainly of Calcite. On the south side of the fault this marl deposit is on a horizon below that of the top of the "Dolomitic Conglomerate" and although the lithological appearances of the Keuper beds and their thicknesses vary considerably, the following description will explain their sequence and nature.

Section of Keuper Rocks at Beachley, near Chepstow (about 150 yards north of the old Passage-house):

	ft.	ins.
Gravel		
Red marl		
Red marl with greyish blotches		
Greenish laminated marl with sandy layers	3	6
Red marl, with greyish blotches	5	0
Red marl, somewhat arenaceous	3	7
Series of alternating layers of hard and soft marl, conspicuous on account of their regularity	4	0
Red marl, imperfectly laminated	2	6
Hard red marl, soft in places, but in others a marlstone ...	1	5
Red marl	1	10
Hard red marl with horizontal layers of Calcite	0	11
Hard red and somewhat sandy marl with veins and geodes of Calcite: the geodes especially near the top of the deposit	4	0
"Dolomitic" or Keuper Conglomerate		

Proceeding south-south-west from the Passage-house, the red marls are seen in a small exposure; whilst a little further in the same direction is the Carboniferous Limestone. In the cove near the ruined watch-house an interesting section may be studied. The Carboniferous Limestone dips to the south-west, and has adhering to it a thin deposit of "Dolomitic Conglomerate." Red marls, with veins of Calcite and Baryta and some Quartz crystals, succeed, and have a dip in the

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opposite direction. Near the base they become conglomeratic, finally passing into a coarse conglomerate of which fragments of Carboniferous Limestone are the main constituents. A fault lets down these rocks against the Carboniferous Limestone, the latter dipping in directions ranging successively from south-east to south-west. If the western shore of the promontory be followed northwards it will be seen that the dip becomes more westerly. Hewan's Rock is the northerly termination of the Carboniferous Limestone of this locality, and has deflected the flow of the river to the south-west. The whole of the peninsula is strewn with gravel, in which large masses of grit, containing numerous hard quartz pebbles, are very conspicuous.

Reference to the Geological Survey Map will show that in the area between Tidenham and Chepstow there was, in late Keuper times, a land-locked bay protected from the sea on the east by two long islands; whilst a third was situated near its north-eastern extremity. From the same map also we learn that the marginal deposits—in places sandstones—were extensive; and probably the island in the north-western portion of the above-mentioned bay was related to the mainland in the same way as the rock on which St. Tecla's Chapel was built is to the Beachley promontory.

Near Lancaut a patch of "Dolomitic Conglomerate" is shown on the Geological Survey Map. The rocks exposed forcibly remind one of the gritty beds in the Upper Limestone Shales (Carboniferous System) of the Avon (Bristol) Gorge section. In a quarry about four feet of grit are visible, succeeded by about six feet of bluish-grey and yellow imperfectly laminated clay, with an indurated and somewhat siliceous band near the top; whilst a foot above the grit are indications of another such layer.

In the deeper portion of the bay normal Keuper marl was laid down, and also a deposit of hard greenish-grey marl with small quartz pebbles; such a deposit being exposed in the railway cutting before crossing the bridge at Chepstow, and also in the side of the road less than a hundred yards to the west-north-west of the bridge over which the road from Sedbury to Tutshill passes. A reddish sandstone, presumably an arenaceous development of the "Dolomitic Conglomerate," is exposed in the south bank of the road about a quarter mile south-west by west of where it crosses the brook, or about three-fifths of a mile south-west by west of Tidenham Station.

Standing upon the high ground at Woodcroft, we can easily trace the limit of the Keuper sea in the immediate neighbourhood, a steep cliff forming the north side of the bay. And looking from this superior height towards Sedbury Cliff the limit of the Rhaetic ocean may also be approximately determined, for it did not encroach more upon the Palæozoic rocks than to allow of the deposition of an additional 18 feet of rock.

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In the neighbourhood of Chepstow, on the Monmouthshire side of the Wye, are several outlying patches of rock, which have been identified as "Dolomitic Conglomerate." In Piercefield Park, the deposit resembles the sandstone or grit of Lancaut, but a piece of conglomeratic rock was also obtained. In the north-side of the Usk and Chepstow road about half-mile west of Crossway Green more or less typical "Dolomitic Conglomerate" is exposed, but in a quarry about 200 yards north-north-east of Great Cophill it is seen as a true grit, massive-bedded, with a parting of a reddish shaly deposit. It is difficult to believe that the rock quarried here is "Dolomitic Conglomerate," but a similar rock occurs in two out-lying patches about three-quarters of a mile north-east of Mounton. Proceeding down this beautiful wooded valley, we come upon the village itself, and in the cliffs overlooking it, "Dolomitic Conglomerate" in its typical form may be studied. In the wood on the south-east side of the road ascending Trap Hill from the village, however, some evidence of a transition between the typical "Dolomitic Conglomerate" and the Cophill Sandstone was obtained.

RHAETIC ROCKS.—Of these rocks there is an excellent section at Sedbury Cliff. The well-known Bone-bed rests directly upon the "Tea-green Marls," and usually occurs in the form of one or more layers of light-grey, micaceous sandstone. Sometimes, however, this development is replaced by an interesting conglomerate, in all respects similar to that so well-known at Aust Cliff. One subangular mass of marl had a diameter of eight inches. In the conglomerate vertebrate remains are well preserved, but often crumble away when an attempt is made at extraction. About eight feet above the "Tea-green Marls" there is a bed of limestone, the equivalent of which may be traced in North-west Gloucestershire and Worcestershire, and since both its faunal and lithic characters are very constant, it affords a good datum-level for correlation purposes. Throughout the black shales the ordinary Lower Rhaetic fossils abound. Of the Upper Rhaetic deposits the *Estheria*-bed is the most interesting. In some parts of the cliff the *Estheria*-bed occurs in nodular masses and exhibits arborescent markings, but it may be observed to pass laterally into a greenish fine-grained rock without these markings; also into a cream-coloured, somewhat laminated rock. Thus it resembles, lithologically, its equivalent in North-west Gloucestershire and Worcestershire, and the same is true of it from a palæontological standpoint. Fragments of *Lycopodites* and the carapaces of *Estheriæ*, however, are rare at Sedbury Cliff. The *Estheria*-bed is quite distinct from the Cotham Marble. At a certain horizon in the superincumbent shales ostracods abound, mainly *Darwinula liassica* and varieties.*

LIASSIC ROCKS.—The lowest beds of the Lower Lias may also be studied at Sedbury Cliff. The higher beds are somewhat inacces-

* Quart. Journ. Geol. Soc., vol. lix. (1903), p. 390.

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sible, but it is the lowest deposit of the series to which attention should be specially directed. Mr. A. Vaughan, B.A., B.Sc., F.G.S., who has given a detailed description of these beds, wrote of the conglomerate that it was "composed of fragments of a very compact, lithographic, argillaceous limestone, which exhibits well-marked conchoidal fracture."* The large fragments are tabular, and lie horizontally, but the smaller pieces lie in all directions, and some of them are conspicuously rounded. In some places the erosion, of which this conglomerate is evidence, removed the whole of the Cotham Marble, and when this was the case the conglomerate rested directly upon certain greenish-grey shales belonging to the Upper Rhaetic. Sometimes, however, the whole of the Cotham Marble was not removed, and then a thin layer of conglomerate can be noticed adhering to it; and often—when the erosion has proceeded farther—fragments of bored Cotham Marble can be observed attached to the under surface of the conglomerate. Here, then, we have a distinct line of demarcation between the Rhaetic and Liassic series. The succeeding Liassic strata belong mainly to the *planorbis*-zone. Those intervening between the Rhaetic and the beds characterised by *Ammonites* (*Psiloceras*) *planorbis* have been termed the *Pleuromya*-beds. They yield *Modiola minima* and *Ostrea liassica* abundantly; whilst the *planorbis*-beds contain *Limæ* of several species, *Anomia*, *Unicardium*, and several other lamellibranchs. There are no indications that there are any strata of later date than those deposited during the hemera *planorbis* in the cliff-section.

Such is the description of the Mesozoic rocks around Chepstow. They do not cover a very large area, but the deposits which are present are worthy of considerable attention, for they afford several points of interest and importance.

* Quart. Journ. Geo. vol. lix. (1903), p. 396.

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PRIMARY ROMAN ROADS INTO HEREFORDSHIRE AND MONMOUTHSHIRE AND THE CROSSINGS OF SEVERN.

By James G. Wood, M.A., F.G.S.

When we enter upon the consideration of the Roman roads leading into and traversing the counties of Hereford or Monmouth, or the identification of the several routes through western Britain, described in the Antonine Itinerary, and the stations named on them, it will be of material assistance if we can arrive first at a definite conclusion as to the original design with which the Romans laid out their roads with a view to the more efficient military occupation of the country west of Severn. On such original framework was gradually built up a network of other main roads, vicinal roads, and portways, some of which, I think, have been mistaken for parts of the Antonine routes.

It must be recollected that the Itinerary was comparatively late in its compilation; and it would be as erroneous to suppose that each route there described formed an originally complete road by itself, as to suppose that a "through-table," in the Bradshaw of to-day, is any evidence of the original design of the railways comprised in it.

My own conclusions, differing I admit in some particulars from those of earlier writers on the same subject, are as follows:—

The first main road was that which is generally known as, and I here call, the "Watling-street." It will, however, be understood that, besides the line now to be described, there are in many parts of England and Wales numerous roads, of more or less importance, bearing the same name—notably the great northern road through York and Catterick to the Roman wall; and another to Caerhun, in North Wales. These will appear to be branches from or loops on the horse-shoe, which I describe later on.

I adopt the derivation of the term "Watling" from Gwaith-y-lleng: *i.e.*, the work of the Legion[1], and with it I associate all such place names as Wellington, [2] Watlington, Wallingford, Welton, Watford, Pont-ar-vaith (*i.e.*, the bridge over the Pull meurig, between Chepstow and Caerwent), and many variations of them, which a careful study of maps and charters will show to be as inseparably connected with Roman roads as are also the Strettons, Strattons, Stratfords, Stretfords, Streets, Streatleys, and such like, which are to be found along their lines.

1 Such derivations as that of Florence of Worcester, who says the road was made by the sons of King Waetla; and of J. R. Green, who invented a tribe of Wallingas to account for Wallingford, I reject as absolutely inadmissible.

2 It will no doubt be objected that my theory breaks down at Wellington in Somerset, as there is no recognised Roman Road there; and I agree that there is not. But in the grant of Wellington by Edward of Wessex to Bishop Asser, about A.D. 904 (Birch Cart. Sax. No 610; Kemble Cod. Dipl. mlxxxiii), the references in the boundaries to the 'herpath-forde' and the 'theodherpath' (*i.e.* 'the ford of the military way' and 'the public military way') show that the present road from Taunton to Wellington, or a road practically in the same line, was then known by a name which throughout Saxon documents was applied to the Roman ways.

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This derivation receives confirmation from the fact that in some Saxon documents, as they have come down to us, the name appears as "Wæxlinga." Students of place names in the Welsh Marches will know that the Welsh "ll" was as troublesome to the scribes of former days, as its pronunciation is to an ordinary Englishman. The first "l" is often represented by "Th"; and in earlier documents by "þ." Thus "Llanfair" appears as "Thlanver"; and Nantllwyd, in the Arundel MS. from which Dugdale printed, as "Nantxlinat," while in the original confirmation charter it appears as Nantþlivat. Another variation, "Wæclinga," is due to the common confusion in the MSS. between *c* and *t*.

Analagous to "*gwaith-y-lleng* is "*Sarn Helen*"; a corruption of Sarn-y-lleng—the causeway of the Legion. Two roads of that name occur in South Wales.

That the name "Watling Street" is generic is, I think, amply proved by its use in Saxon Charters of the 10th century. Of those collected in Kemble's *Codex Diplomaticus* six mention a Watling Street. Of these two (Nos. cccxci. and mccclvi.) relate to lands near Weedon, and a third (No. mxcix.) to lands between Dunstable and Fenny Stratford. All these are on the main Watling Street which I am about to describe. But the subjects of the others are far distant from it. The fourth Charter (No. ccccxlix.; also in Birch's Cart. Sax. No. 986) relates to lands, not at Stowe in Buckinghamshire, as generally supposed, but between Stow-in-the-Wold, Holwell and Ramsden in Shipton-under-Wychwood. It mentions, besides Wætlinga Stræte, a "fyrdstræte," which was another name for a military way; and the roads so described in that Charter are those generally known as the Foss Way and the Akeman Street. The fifth Charter (Kemble, No. dxc.) describes lands at Upham and Tanlow, near Bishops Waltham, in Hampshire, as bounded by a Watling Street; which in fact is the Ermine way from Porchester to Cirencester. The Sixth Charter relates to lands of which the identification is less certain; but they appear to be east of the road from Chichester to Midhurst in Sussex, and south-east of Cocking; in which case that road also is a Watling Street.

The Watling Street with which we are concerned started from Dover,[3] through Canterbury, Rochester, and Welling. It had two crossings over the Thames, one near Greenwich, the other near Lambeth. The two branches, reuniting near Hyde Park, took the line of the present Edgware Road[4] to St. Albans; and thence in a north-westerly direction passed through Dunstable, and Fenny, and Stony Stratford, Towcester, Welton, High Cross, north of Rugby[5] and Ather-

3 It has often been said to have begun at Rutupiæ. I know the road thence to Canterbury, and am satisfied that it is British and not Roman.

4 For a description by the present writer of the "Ancient Pavement in the Edgware-road," disclosed by recent excavations, see "The Home Counties Magazine" for July and October, 1902. Since that was written I received information of a precisely similar paving cut by railway works between Whitechapel and Stratford below four other road-surfaces.

5 "Venonæ" of Antonine; i.e., ffynonau,—the springs. Five rivers rise within half-a-mile of the place. Observe that in Welsh f=v, and au=e.

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stone; and so over Cannock by Penkridge[6] to Wellington in Shropshire.

That this road was known in the Saxon times as the "Watling Street," through the counties of Bedford, Northampton, and Warwick, is proved by the charters in Kemble's Cod. Dipl., where it is mentioned as a boundary. Mr. H. C. Moore has been good enough to call my attention to a charter of Wombridge Priory, near Oakengates, in Shropshire (circa 1136), where it is again mentioned by name as a boundary; as also in a later charter by Hamo le Strange (1259) to the same Priory (see Eyton's Shropshire vii., 353); and to a Perambulation of the Royal Forest of Wellington and Morfe (temp. Ed. I.; circa 1300) which mentions "Watlingestrete." Again in an Inquisition (7 Ed. i; No. 57) in 1279 the Abbot of Lilleshall was found to be seised by "boscus Abbatis juxta Watlingstrete in foresta de Wombridge."

There is no doubt that main Roman roads were often thus adopted as boundaries of counties, forests, manors, etc. In a paper on the Chace of Ross (Woolhope Trans., 1901, pp. 207 seq.), I showed how the ancient northern boundary of Dean Forest was identical with the Antonine route from Goodrich to Gloucester, including part of the Ermine. Similarly the eastern boundary of the Forest was the road from the old bridge of Striguil to the Leddon Bridge at Gloucester, which, at least as far as Newnham, was Roman; the idea that the Severn was such boundary being due to a confusion between the limits of the Freeminers' rights and the Forestal limits.

To return to Wellington, the Watling Street here took a sharp bend, and almost immediately passing Wroxeter (Uriconium) made south for Church Stretton, Craven Arms, and Leintwardine.

After the elaborate paper by the late Dr. Bull in the Woolhope Transactions (1882, pp. 251 seq.), the identity of Leintwardine with Bravonium on Iter xii. of Antonine must be considered finally established. But I should like to add a confirmation of it from the etymology of the name.

At the S.W. angle of the town (which was a true rectangle) the Clun falls into the Teme. The obvious British name would be Aberafonclyn; the Romans, as was frequently the case, dropped the specific part of the name, and also the initial "A,"[7] and so out of "Aberavon" made "Bravonium." On the other hand, there is no "Aber" at Bromfield, or any of the other places with which it has been attempted to identify Bravonium.[8]

6 Pennocrucium of Antonine—Pen-crug—"the summit where the tumulus is"; there being such just by the road at the river crossing. The name Penk for that river is a curious instance of a derivation from a false etymology which divided the word as Penc-rug, and translated it as Saxon. Here was a collegiate church, the seal of whose Dean is in the library of Hereford Cathedral.

7 Similarly "Abergefenni" was written "Bergavenny" as late at least as the end of the 16th century.

8 Among other places Brandon Camp has been suggested. Its nature and situation alone would disqualify it for a station of the Itinerary. The camp was a mere military post; probably long since abandoned after the pacification of the district. It is impossible to connect the name Brandon with Bravonium. It is pure Saxon; "brant-dun," the steep hill; and was of course acquired after the Roman departure.

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South of Leintwardine the road passed Wigmore Abbey, Aymestrey, Burghill, Elton's Marsh, and Holmer (? Heol-mawr), and so into Hereford. In places, e.g., near Street Court, south of Mortimer's Cross,[9] it is still called Hereford Lane, or "the lane of the military road"; and Hereford itself takes its name from the fact of its being on the line of that road; "here-ford," "the army's way," being the Saxon equivalent of the British "gwaith-y-lleng."[10]

Leaving Hereford, the Watling Street continued still south over Callow Hill (the present Ross Road there is a diversion), and past Wormelow Tump and the tumulus at St. Weonards, to Monmouth, where, crossing the Monnow, it reached Blestium,[11] between the Monnow and the Trothy. Thence it continued on through Troy Park over the high land of Llanishen and Trelleck (where Roman paving has recently been recognised) and by Rhydybedw (the ford by the birch trees) and the Trout, to Shirenewton,; and thence it struck down the Golden Valley direct for the northern gate of Caerwent (Venta Silurum) where it terminated.[12]

It will be noticed how this road, in the line which I have described south of Burghill, left to the west of it the fastnesses of Siluria, such as Clun and Radnor forests, and the wilder parts of Monmouthshire, which I apprehend were at the date of its construction as yet unconquered, though the defeat of Caractacus had broken the back of the Silurian resistance. Caerwent was then a military station, and was one of the first of such stations in the districts; and as such had not as yet been superseded by Caerleon. Considerations such as these suggest the line described as at least the most probable primary line.

Hoare and others have carried the road from Church Stretton into the route (Iter xii.) of the Antonine Itinerary from Carmarthen to Uriconium. This road, after passing through the Vale of Glamorgan, struck up to Caerleon and Abergavenny, and thence skirting the Skirrid crossed over to the Dore Valley, passsed Abbeydore station[13] and, as "the Stone Street," through Madley to Kenchester (Magna Castra) and falling into the road above described near Burghill, continued on to Uriconium. But it is obvious that, if the whole of that Iter was made at one time, it would follow that it was subsequent to the subjugation of Southern Wales; and until then Caerwent would have had no connection by military road with the north.

9 It would be an unsafe generalization to say that the word "Cross" in a place-name indicates the intersection of a Roman Road. But it will be found to be so in a great many instances. When it became customary to erect crosses at such places it would naturally be on the main roads that they would be placed. It will be noticed how often the word occurs in the text.

10 It has often been asserted that the Saxon name of Hereford was Henfordd; that is, "the old road." This would equally be consistent with the theory of this paper. There are many instances on the hills of Glamorgan of roads believed to be Roman called, variously, Henfordd, the old road, and Genffordd, or Cenffordd, the Ridgway.

11 Bal-ystum. The "ystum" or "tortuous winding" at the mouth of the Monnow has of recent years been nearly obliterated by an artificial straightening of the course at the south of Chippenham Mead.

12 This Gate was unearthed by Messrs. Martin and Ashby in 1902. I had always hoped for this confirmation of my line from Shirenewton.

13 For the description of the paving of the road at this point see paper by Mr. H. C. Moore in Woolhope *Transactions*, 1901, page 190.

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The great horse-shoe thus laid out (from London by Wellington to Caerwent) required to be formed into a complete circle.

Starting therefore from London *via* Silchester and the valley of the Kennet and so by Bath and Durdham Down, the "Via Julia" led to the shore of Severn at Avonmouth, whence, by water communication to the ancient harbours of Caldicot Pill and St. Pierre Pill and a Portway thence, Caerwent was again reached; this time at its southern gate.[14]

The next step was to open up communication with the heart of the area so enclosed. For this purpose two diameters of the circle were drawn intersecting at Cirencester. The one the Ermine Street, starting near Porchester, and so connected with the early settlement of the Isle of Wight, cut the Via Julia at Cross Ford (between Marlborough and Hungerford) and through Stratton St. Margaret (near Swindon), Cirencester, and Birdlip, proceeded to Gloucester and thence by Newent, Gorstley,[15] Winds Cross, Preston, Aylton Chapel, Ashperton, and Stretton Grandison to Ludlow, and so on by Bromfield (which has been mistaken for Bravonium on account of the Tumuli and other remains there), and Onibury to join the Watling Street at Craven Arms.[16]

The other diameter was the great Foss Way from Newark, which, cutting the Watling Street at High Cross near Rugby (Venonæ), the Ermine Street at Cirencester, and the "Via Julia" at Bath, struck down into Somerset and Devon.

From Caerwent[17] a road was driven out east and west; east to cross the Wye above the site of the later town of Chepstow, and reach the mines of Dean Forest past the Roman Town in Lydney Park, of which the name is absolutely lost to us; west across the Usk to Caerleon where the 2nd Legion has left us such instructive remains of its military government and social habits.[18]

This fact seems to me to afford additional evidence as to the order of the construction of the roads with which we have been dealing. With the exception of the Memorial Stone recently discovered at Caerwent (which may be of a date as late as, but not later than, A.D. 280, and does not necessarily indicate that the place was a station of that Legion), no trace of the 2nd Legion has been found there; while from Caerleon along to Abergavenny, and also in the north the remains of that Legion are ample.

I have dealt with two crossings of Severn: one at Gloucester, the other at Avonmouth. I believe a third existed at Newnham. I

14 I do not mean to suggest that the construction of the "Via Julia" was subsequent to that of the Watling Street. It may have preceded or been contemporary with it.

15 Here branched off the road by Ariconium, Goodrich, and Blestium, to Caerleon, Iter xiii.

16 I consider the term "Ermine" as generic as "Watling." Two principal roads are now recognised as such; the Ermine through Cirencester, which I have partly described in the text; and that from London to Godmanchester which, I suppose for distinction is generally spelt "Erming." "Heremannes-stræt" (or the Soldiers' Way), as readily became "Ermine Street" as did the German heremann, or Captain, become "Arminius" under the pen of the Roman annalist.

17 I very much doubt the authenticity of the term "Via Julia," as applied to any road west of Severn; either that through Caerwent or the so-called Via Julia Maritima and Via Julia Montana from Caerleon westward.

18 See "Isca Silurum" Pl. xxiii., for Potters' marks of the 2nd Legion found at Caerleon.

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have examined the country between Cirencester and that Ferry, and I believe I have ascertained the line of a Roman road connecting those places; and so, by what is plainly such a road striking up from Newnham by the Grange at Little Dean and through Cinderford; bringing Cirencester into direct communication with Ariconium by Weston-under-Penyard. This would probably be a much later road than the others described, and the part east of Severn requires further examination.

I absolutely reject as apocryphal and conjectural the crossings at Aust (now actually marked on some maps as Trajectus Augusti!) and Oldbury, which have been suggested by some writers. This I have dwelt with more fully in the following paper on "The Ancient Harbours of Gwent."

ADDENDUM.

Since the foregoing paper was written the publication of "Roman Roads in Britain," by Mr. Thomas Codrington, M.I.C.E., F.G.S., has made a valuable addition to the literature on the subject; which all future enquirers will find it necessary to study. One signal service I think he has rendered by making it impossible hereafter for anyone to quote, or rely upon, that mischievous forgery, "Richard of Cirencester"; which has done so much to mislead previous writers, even as late as Mr. James Davies' paper in the *Transactions* for 1892, p. 337.

Mr. Codrington has not confined himself to the lines of the Itinerary; but it will be obvious on an examination of his most useful maps, and indeed he himself suggests, that a great deal remains to be done before we can be satisfied that we know all the roads that the Romans left us. He has left questions of derivation of names of roads and places severely alone; and has, I think, thus shut out a good deal of evidence which, carefully examined and applied, would in many cases have suggested for investigation lines of roads which he himself desiderates, notably in the case of a road from the fortress of Pevensey towards London.

It will be seen that in several instances he and I have arrived at different conclusions, particularly as to the line of the Watling Street south of Church Stretton; Mr. Codrington wholly ignoring the line I have sketched thence to Caerwent. We differ, too, as to the connections of the Ermine with Monmouth and as to the crossings of Severn. All I can hope is that these differences will lead to further local investigations, and if ultimately it should be proved that any of my conclusions, independently arrived at after years of local knowledge and study of documents, require modification, none will rejoice more than I shall when certainty is arrived at. The purpose of such papers as this is to promote discussion and investigation, not to invite the acceptance of the *ipse dixit* of the writer.

The map accompanying this paper has, through Mr. Codrington's kindness, been founded in the main on part of one of his maps; but it will be understood that so far as this map differs from his, either by way of addition or omission, the present writer is alone responsible.

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THE ANCIENT HARBOURS OF GWENT ISCOED OR SOUTH MONMOUTHSHIRE, AND THE ROMAN PASSAGE THENCE.

By James G. Wood, M.A., F.G.S., &c.

About one and a half miles and four miles respectively west of the Wye's mouth, two streams now called St. Pierre Pill and Caldicot Pill, fall into Severn; both reduced to such insignificant dimensions that they give no indication of their former importance.

St. Pierre Pill even as late as 1846, when Brunel carried the railway over it by a wooden viaduct some quarter of a mile long, was a considerable estuary. Those who now cross it on a solid embankment see only a small stream, and green fields in place of mud banks on which, some half a mile above the viaduct, 70 ton barges used, as late as 1860, to lie up to discharge coal for St. Pierre House.

This estuary was the outfall of the stream called the Meyrick or Pwllmeyric Brook, which rises at Newchurch, and, after passing underground for about a mile from Pandy Mill to Well Head, traverses the Mounton Valley.[1] There are throughout its course indications that formerly it carried a much greater body of water than is ever seen in it now.

The name "St. Pierre Pill" is comparatively modern. Its older name "Porth-is-coed" (the Harbour below the Wood), corrupted into Porthisceuin and Potischiuet (Domesday), has come down to us in the form of Portskewet: which was transferred from the harbour to the manor lying between it and Sudbrook (or Southbrook its south-west boundary), and so to the church and vill founded in the manor, a mile or so westward of the Pill. This transference has given rise to the mistaken idea that the harbour itself was near Sudbrook Camp.

Caldicot Pill is the estuary of a stream which rising (like the Meyrick) on the ridge of the Wentwood, was originally known as the Twrc, corrupted into Torogy and Troggy, and Latinised as "Tarocus." The upper half is called the Troggy; the lower the "Nedden." Its source in the earlier charters is called "Pentyrch," i.e, "The Head of the Twrc"; and there later the fifth Earl of Norfolk built Cas Troggy, often falsely called Striguil Castle, about 1300.

The name Twrc (or the "Boar") is not uncommon in South Wales as the name of streams with deeply eroded channels, such as this has in the Wentwood. The name "Nedden" is given to the parts below a spot called "The Whirlpools" (nedd—a whirlpool), where the Carboniferous Limestone sinks below the New Red, and part of the stream is

1 Murchison, Sil. Syst. p. 159.

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absorbed. This is a feature of some geological interest, in connection with the fact that, while the whole of the valley around Caerwent has been drained, and the Nedden practically dried up, by the Severn Tunnel, the Roman well within the walls of Caerwent, recently discovered and cleaned out, being sunk in elevated Limestone not cut by the Severn Tunnel, is now available again as a water supply.

With this preface we proceed to ancient records which throw important sidelights on the history of these places.

These we find in the Liber Llandavensis, which, according to the best opinion, was the work of Geoffrey of Monmouth, when Archdeacon of Llandaff about 1150; and is a compilation of then existing earlier records. Some have doubted the genuineness of such records, while admitting the authorship of the compilation. This is not the place to examine this question; either the records are genuine, or else those who forged them must have done so with a knowledge of the then state of things, and the traditionary history of the places described; otherwise they would have carried their refutation on the surface. In either case we may fairly rely on them as descriptive of the places mentioned at, or about, the times to which they purport to belong.

The first record to which we have to direct our attention is the grant by Meyric to Bishop Oudoceus of land practically coterminous with the present parish of Mathern. This follows the account of the death there of Meyric's father, St. Teudric, after the battle with the Saxons at Tintern Ford. It is impossible to fix with any certainty the period of any of the persons named, or of the battle. It may, however, with reasonable probability be attributed to the 6th century.

The place of Teudric's death is the site of Mathern Church, where he lies buried. According to the record he was carried from Tintern "donec ad locum unum venerunt juxta pratum unum versus Savernam," that is "until they came to a place near a meadow towards Severn." This seems so absurd a description that I feel certain the transcriber blundered, and that for "pratum" we should read "portum"; and, as a matter of conjecture, I think we should, instead of "unum," read "isceuin." With such emendations it would read "until they came to a place near Port Iscoed leading to Severn"; which would exactly express the position of Mathern Church near the head of St. Pierre Pill.

But when we proceed with the record we pass from conjecture to certainty. At the end of the Latin record the boundary of the grant is set out in a mixture of Latin and old Welsh. It starts "Oaper pull Muric sursum yrpull yrlech Libiau," that is, "from the mouth of the Pwlmeyric upwards along the Pill to Libiau's Stone." Then it goes eastward, and eventually to Lunbiu's Kiln, which I identify as at or near a place I knew as Clay Pits, but now called Fairfield, near Hardwick. Then it goes down "dyrpull ar hyt y pull dy aper pull neuynn y Guy ar hyt Guy ha hafrenn can ychoretou haidiscynua

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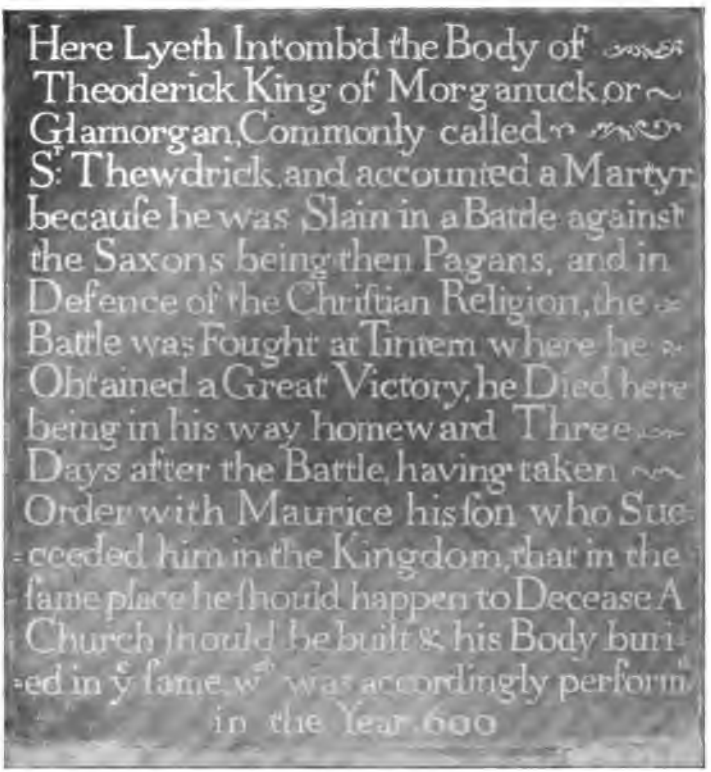

TABLET IN MATHERN CHURCH TO THE MEMORY OF ST. TEUDRIC.

No. 13. To face page 192. *Photo. by F. H. Worsley-Benison.*

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RUINED CHAPEL ADJOINING SUDBROOK CAMP, NEAR THE SEVERN TUNNEL PUMPING STATION, PORTSKEWETT.

Photo. by F. H. Worsley-Benison.

No. 14. To face page 103

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yloggou[a] betaper Muric," that is, "To the (Hunger) Pill, and along the Pill to the mouth of the Hunger Pill on the Wye; and along the Wye and Severn with the fishing weirs and landing place for ships to the mouth of Meyric."

It is clear from this description that the landing place must have been on the east side of St. Pierre Pill. Possibly there was one also in Hunger Pill, but that involves the consideration of a different matter; the existence of an ancient ferry from a place called Trefiridiouen, near Hunger Pill (which I interpret as Tref y rhyd y Ouen,—the village of Owen's ford or ferry) to Hewan's Rock (*i.e.*, Owen's Rock) on the other side of the Wye.

The next grant is by Brochmael, the son of Meyric, and grandson of Teudric, of the land lying west of St. Pierre Pill, described as Yscuit Cyst, that is, "Iscoed Shore." It comprises three modii of land with their "fishing weirs in Severn and in the Meyric on both parts of the foreshore" (that is, the shore of Severn, and the shore of Meyric, or St. Pierre Pill), et cum libera applicatione navium in hostio pullmouric et cum navibus anfractis in toto confinio illius terræ et maris"; that is, "with free right of bringing ships to land in the mouth of the Pwll Meyric and all rights of wreck where that land borders on the sea."

In this grant we get the right of landing on the west side, as in the grant of Mathern we had that on the east side, of St. Pierre Pill.

The third record is of another grant by Brochmael, which has received various interpretations by Mr. Octavius Morgan, Mr. Wakeman, and the editor of the Liber Llandavensis; with none of which I can entirely agree.

It is of the church of Castell Conscuit and the church of St. Bride with six modii of land "Cum libera applicatione navium in hostio Taroci et cum coretibus suis omnibus"; that is, "With free right of bringing ships to land in the mouth of the Troggy, and with all its fishing weirs."

Here then we find Caldicot Pill in use as a harbour.

The church of "Castell Conscuit" I identify as the old church on the site of which the present ruined Saxon-Norman Chapel stands adjoining Sudbrook Camp, close to the Severn Tunnel Pumping Station. It has nothing to do with Caldicot Castle, which did not exist till the latter part of the 12th century. If this is so, the name Castell Cwn Iscoed (or the fortress mound of Iscoed) indicates that the portion of the camp now lost by the inroad of the sea had a watching mound such as we see at Caerleon, Stortford, and elsewhere.

My conclusion is that Caldicot Pill and St. Pierre Pill were at the dates of these records old-established harbours—that they dated from

a. This would be written in modern Welsh "a y disgynfa llongau"; explained in Silvan Evan Dict. s.v. as "a station, port, or harbour for ships."

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Roman times—that the crossing from the end of Via Julia at Avonmouth was by preference to Caldicot Pill—but that in certain states of tide and weather St. Pierre Pill offered an alternative landing place; while Sudbrook Camp guarded both.

For the description of the Portway from Caldicot Pill to Caerwent, see Ormerod's Strigulensia, p. 16, reprinted from proceedings of Archæol. Inst. of Gt. Britain, at their Bristol meeting of 1851. But there is much in that paper that is quite unreliable—founded in part on the frauds of "Richard of Cirencester," and on imperfect MSS. and conjectural emendations of the Itinerary.

The name "Iscoed" (below the wood) expresses that part of Gwent which lay south of the belt of woodland which stretched from Penallt ("End of the Wooded Slope") near Monmouth on the Wye across to the Usk below Caerleon, including Trellech, Earlswood, and Wentwood.

There is a traditional belief that ships used to pass up Caldicot Pill; some say as far as Caldicot Castle, others even as far as Caerwent. From what is said at the beginning of this paper as to the filling up of St. Pierre Pill, it will appear possible that this tradition is to some extent founded on fact.

It will be appropriate here to consider, in connection with these harbours, the line of road described in the Itinerary from Caerleon through Caerwent to Silchester (Calleva). I do not stay to consider the conjectures and theories of many previous writers, which are mutually destructive, and all require the order and distances of the stations to be rewritten to suit them.[3] I deal only with the portion as far as Bath; and in support of my conclusion that the passage of the Severn is not therein referred to as the Trajectus, and was from the harbour of Caldicot Pill, or St. Pierre Pill (as wind or weather permitted), to Avonmouth, I give the following table in which the Antonine measurements (according to Parthey's edition of 1848) are reduced to English measure:—

Stations and Distances of Itinerary.			Modern Names and Distances by Ordnance Survey.		
	Miles.	Yards.		Miles.	Yards.
Isca to Venta ...	8	482	Caerleon to Caerwent	8	880
Venta to Abona ...	12	1532	Caerwent by Caldicot Pill and Avonmouth to Station on Durdham Down	12	1320

3. I do not include in this criticism either Dr. Clifford's papers in the Transactions of the Somerset Archæological Soc. for 1876; and in Vol. iii. of the Trans. of the Bristol and Gloucester Arch. Association; or that of Mr. Martin, F.S.A.. in the Proc. of the Clifton Antiq. Soc., for 1885. All are most valuable, and should be carefully studied. At the same time I should say that where those writers agree with me it has been a great satisfaction to find such confirmation for my conclusions, which were arrived at quite independently. But while I do not question the existence of a camp at Sea Mills or a Roman road to it; or even that that may have been an original terminus of the Via Julia, I for similar reasons to those put forward by Dr. Clifford, and with practical knowledge of the navigation there in former days, continue to hold that the Abona of Antonine was not at Sea Mills, and that the landing place must have been on the Severn shore.

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Stations and Distances of Itinerary.	Miles.	Yards.	Modern Names and Distances by Ordnance Survey.	Miles.	Yards.
Abona to Trajectus	8	482	Durdham Down to Bitton, ferry over the Boyd River...	8	——
Trajectus to Aquæ Solis ...	5	908	Boyd crossing to Bath	6	——
Total ...	34	1644	Total ...	35	440

In connection with this Passage it is well to record that until the latter half of the last century the mouth of the Avon formed a delta with eastern and western entrances. The eastern entrance was opposite what on the old Survey was marked as Ancient Mere Bank, and I long suspected to be the end of the Via Julia. It is now recognised as a Roman road. Through this entrance I often passed between 1850 and 1860. On my next visit to Avonmouth in 1878 I found this entrance wholly filled up and obliterated.[4] So the same forces had been at work on both sides of the Severn estuary to wipe out the Roman landing places.

I may add that a crossing at Aust (which found favour with Ormerod) would make the Antonine distances eight miles too short; and a crossing at Oldbury (which Rudder said was "undoubtedly the Trajectus") 17 miles too short. Besides, there is not a trace of a Roman road to either place.

POSTSCRIPT.

THE "ANTHONY POST" AT AVONMOUTH.

Several months after the foregoing paper was written, there came accidentally under my notice the following evidence, which appears to strongly confirm the view which I have advocated that the Roman landing place on the east of Severn was not at Sea Mills on the Avon, but on the bank of Severn at Avonmouth.

In 1610 litigation was on foot in which the predecessor of the Duke of Beaufort claimed the right of "wreck" in Severn. Depositions taken in that proceeding are preserved in the Public Record Office.[5] In these I found that William Pryer, of Northwick, deposed that "all the saide ryver of Seaverne from *a post called Anthony Post* (beinge near unto the ryver of Aven that cometh from Bristowe into the saide ryver of Seaverne) is and hath been counted and taken to be in the liberties and lymitts of the complaynant belonginge to the Castle and Manor of Chepstowe, &c."

4. This silted up channel is now being re-excavated as part of a site of the new dock. In the course of the work a dagger blade of the Bronze age has been found in what was the fairway, 50 fee below the present surface. See "Antiquary" for 1903, p. 324.

5. Exchequer Depositions 9 James I., Hilary No. 1.

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Similar evidence was given by John Seager and John Hart, both of Aust; the first mentioning "*a post called Anthony Post*," and the second "*a place called Anthony Post.*"

Next I found the record of proceedings in 1725 between the Duke of Beaufort and the then owner of the St. Pierre Estate, in which the former claimed that the establishment of the New Passage at Portskewet was a disturbance of his franchise of the Old or Aust Passage.[6] In this suit Richard Rosser, of Tidenham (tobacco pipe maker, aged 97 years!), deposed that he knew "the river called Avon or the Bristoll river, and a place on that side called Sheepers Deanes or Sheep Deanes[7] passage; and this deponent saith that the proprietors of the passage or ferry called Aust passage have, and always had, a right to land their passengers, if occasion, at any place on the English shore between the said place called Sheepers Deanes and *a place called the Anthony Post near the mouth of the said Bristoll river, &c.*"

Enquiry of Mr. Cowper Coles, the agent of the Duke of Beaufort, elicited the fact that the name "Anthony Post" is wholly unknown at the present day; but he was kind enough to promise a search for any identification of the place so called. He has now been good enough to send me a tracing of a map, preserved at Badminton, intituled "A Chart of the Royalty of His Grace the Duke of Beaufort on the River Severn." From the style of the mapping, and from several points of internal evidence, I have no doubt that it is if not older than, at least contemporaneous with, the litigation of 1610. It shows the Gloucestershire shore from Avonmouth to Shepperdine; and at a short distance N.E. of Avonmouth is depicted an erect stone, against which are written the words, "*Mile Stone or Anthony Post.*"

The plotting of the map is defective, and it is not drawn accurately to scale; but, as near as can be estimated, the stone stood just three-quarters of a mile due west of the end of the "ancient mere bank" above mentioned; that is of the spot marked "Hoar Gout" on the 6-inch Survey.[8] Mr. Coles tells me that an examination on the spot satisfied him that the site of the stone is now under the sea,[9] or where the *new* Avonmouth Dock is being constructed.

On reference to the 6-inch Survey it will be seen that a road goes due north from the end of the Mere bank to Mitchell's Gout. This on the old plan is "Cold Harbour Pill"; sufficiently indicative of Roman work in the neighbourhood. Another road goes from the same point in the direction of *Elbury Gout*, the channel from which led close to the site of the stone. In "Elbury" (whether it means "the fort of the foreigner" or "the old fort") we have evidence of the past existence of earthworks which have disappeared, and would correspond to the works at Southbrook.

6. Chancery Proceedings, 1714-58; Bundle 418.
7. *i.e.*, Shepperdine, 5 miles N.E. of Aust Cliff; originally Scip-Worthign; or the boat-village.
8. Gloucestershire LXVII., S.W.
9. It is well known that a considerable inroad of the sea took place here early in the last century.

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It is evident that the stone was in existence in the early part of the 17th century; that the Surveyor who then made the old plan recognised it as a "milestone," while there was no road there then; nor can its existence as a milestone be attributed to any period but one long before English milestones came into use.

Whether the stone had on it the letters "ANTON" or not we shall probably never know, but it is impossible not to feel that such was the origin of the name by which the "milestone" was known; and that it was in fact a Roman "miliary."

If the old Mere Bank was in fact the elevated causeway of the Roman Road, then from its end two roads would naturally have diverged to the Pills at Elbury and Cold Harbour respectively; giving access at two points according to tide and wind. The former, for reasons which suggest themselves to me, would be the preferable point of departure; and there at the landing place stood the old miliary stone.

I do not despair of finding further particulars of the stone in other quarters. I hope I have written enough to induce others to take up the quest.

JAMES G. WOOD, F.S.A.

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THE PLACE NAME OF CAERWENT.

By James G. Wood, M.A., F.G.S., &c.

In 1863 the late Mr. Octavius Morgan, V.P.S.A., published in the Transactions of the Monmouthshire and Caerleon Association a paper on the Wentwood, Castle Troggy, and Llanvair Castle. It would be superfluous to acknowledge the debt that antiquaries owe to Mr. Morgan and his fellow workers at that time; but I am compelled to say that there is much in that paper, as in some others, which, in the light of subsequent inquiry, must be accepted with caution, and not a little that I cannot regard but as erroneous.

He investigates the meaning of "Gwent," or "Went," at considerable length. Rejecting an at least doubtful origin of the word, he also rejects Dr. Pugh's explanation of it as meaning "a fair open country," as both "a bold stretch of etymology," and "a description quite unsuited to the county of Monmouth." He then goes far afield, and connects the name with either a tribe of Celtic Wends or the Veneti of Central Europe, basing his hypothesis on a passage of Cæsar which, after all, only alleges a transference of place-names by the Belgæ to the shores of Britain.

Before any place-name can be safely interpreted, it is essential to locate it in as many places as possible, and determine the common feature of those places. In the large majority of cases a place-name is derived directly from some peculiarity on the spot—in very exceptional cases only it is imported; and I always receive with suspicion a derivation from an historic event, or the name of a Roman General or other individual.

Now in Britain "Venta" occurs thrice; Venta Silurum, Venta Belgarum, and Venta Icenorum. The identity of the first with Caerwent is certain; that of the others with Winchester and Norwich is generally accepted.

To these we must add Cantium, Chent or Kent; a form due probably to the Latinising of a dialect-variation of the root-word.

Of these places Kent and Winchester lay at the east and west ends of the great forest of Anderida. Norwich lay among the forests which have left us their traces in such names as Southwold, Methwold, etc.

Across Monmouthshire there stretched a wooded highland from Penallt ("the end of the wooded slope") near Monmouth, to Caerleon, including the forest of Wentwood; which has left us its impress in such

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place-names as Tintern (Tynderrin "the house among the oaks"); Penterry ("the end of the oaks"); The Vedw, formerly Llanybedw ("the church among the birches"); and Coedllifos ("the elm wood"). This Woodland was the great dividing line. North of it, stretching away beyond the Trothy and the Olway towards the hills of Hereford and Brecon, lay "Gwent Uchgoed," or "Gwent above the Wood"; south of it, and stretching over the low grounds to the banks of Severn, lay "Gwent-is-coed," or "Gwent below the Wood."[1]

Mr. Morgan was to a great extent misled by supposing that "Gwent" was one continuous area comprising all, and more than all, Monmouthshire, to which admittedly the term, as I explain it, was inapplicable. In comparatively modern times it came to be identified with the whole county; in earlier periods it was not. There were, as we have seen, two distinct areas divided by the line of wood, the remains of the more extensive forest of earlier times.

In each case, then, a "Gwent" was in immediate proximity to, but distinct from, an extensive wooded area; and from this common feature the name was given to the district, as "land cleared from the forest," or a "ridding"; or in Pugh's words "an open country."

The expressions "uchgoed" and "iscoed" had their analogues in the Dean Forest, where until 1838 the mines in the north part were under charge of the Keeper of the Gawle above the Wood; and those in the south of the Keeper of the Gawle below the Wood. In early times, when the iron mines of the outskirts of that Forest were alone in work, the mass of the Woodland in the centre divided the two. In later times the division became purely arbitrary by reference to an imaginary line. Similarly of the two Bangors in North Wales, the monastery of Bangor Iscoed was so distinguished as being south of the great Forest of Denbigh.

"Caerwent" then is "the fortification within the clearing from the Wood."

The name occasionally appears in the form of "Casgwent," or "Castell Gwent."

It has been persistently asserted by writers of books of more or less pretension, copying one from another, that at some time, which they do not fix, these names were transferred to the town of Chepstow. I believe this to be entirely erroneous.

Mr. Marsh, the latest writer on Chepstow Castle, deals with the point in two places in his Annals. On page 5, after giving the various forms under which "Striguil" (the true and only early name of the town of Chepstow) appears, he writes :—"Its alternative Welsh name of Cas Gwent (the Fortress of Gwent), which it acquired in succession

1 It is as well to add here that it is a mistake, but one often made, to connect Wentloog (the name for part of the area between the Usk and Rhymney rivers) with Gwent. The true derivation is Gwynlliw-wg or "the land of Gwynlliw" the father of St. Cadoc.—See Rees' Cambro. Brit. Saints, p. 309, sq.

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to its neighbour Caerwent, Venta Silurum of Roman Britain, need not detain us." He gives us no authority, but we shall see presently where he was copying from.

On page 60 he cites from the Continuator of Caradoc of Llancarvan that in 1173 "Jorwerth's son Howel was busy in Gwent iscoed, and reduced all that country except the Castle"; and then Mr. Marsh adds: "The castle alluded to was of course Cas Gwent, the Welsh name of Striguil." Now assuming that the Castle referred to was Striguil, there is nothing in the passage cited to show that the writer would have called it "Cas Gwent." But, besides this, one of the better MSS. has "Kestyll" (the plural), and not "Kastell" (the singular); and it must be remembered that at the date in question Caldicot certainly, and Penhow and other castles of Netherwent probably, had arisen. So much for supposed authority from the Brut.

Other writers call to witness Leland or Camden. Leland, fairly accurately, describes Caerwent under the name "Cairguent," and says "a great likelihood is that when Cairguent began to decay then Chepstow began to flourish"; and as to Chepstow he says: "Some say that the old name of this town is Strigulia," which it was indisputably. There is not a word here of a transference of the name. So much for Leland.

Camden, describing Chepstow, wrote that the Wye "runs by Chepstow q.d., if you derive it from the Saxon, a market or place of trade, called by the Britons Castle Went"; with "Castelh Guent" in the margin. He again cites no authority; and then, after mentioning Caerwent as still existing four miles to the west, proceeds with the absolutely erroneous statement that "five miles west of this place stands at the foot of a hill Strigull Castle," a confusion with Cas Troggy (which by the way is on the top of the hill of Wentwood), which I need not waste time in dealing with, for it has been often exploded. In fact, I regard all Camden's statements about this part of Monmouthshire as second-hand.

The fact is that there is no single document which can be called in aid of the statement in question, except a passage in the Liber Llandavensis, page 44 of Evans's edition. There, in a list of the possessions of Llandaff in the Bull of Honorius II., dated 1129, we read: "Villam lan cinmarc, cum prato super gui et coretibus suis, et terra infra castell guent." Now the Vill of St. Kinsmark is to the N.W. of Chepstow Castle, and included Piercefield and lands along the Wye; and certainly the following words as they stand here, "with the meadow land on the Wye and its fishing-weirs, and the land below Castle Guent" (*terra* being connected with the preposition *cum*) would lead to the conclusion that the castle here mentioned as Castle Guent is Chepstow.

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But this Bull is a reproduction of one of the previous year (p. 32), where we have " et terram," and not " terra " ; so that what is here described is not an appurtenant of, or connected with, St. Kinsmark at all, but an independent possession. Moreover, the photographic reproduction of the later Bull shows a trace of the contraction mark, indicating that even there " terram " is the true reading.

The " terra " in question I identify with what elsewhere in the " Liber " is described as " Castell Conscuit and San Breit," being the lands held with the ancient church at Sudbrook, near Portskewet, and extending thence along by Caldicot to St. Bride's, and so, in fact, south of Caerwent, and properly described as " infra castell guent," *i.e.*, below Caerwent.

It would involve much too long and critical an examination of the description in the Bulls and Grants in the Liber for such a paper as this ; but I am prepared to show from the evidence of the Liber itself that the other areas, mentioned in the list cited, exclude the possibility of the area referred to being anywhere near Chepstow Castle.

Then again, there is no period in which it can be said that Caerwent had lost its name and Chepstow had appropriated it.

It is all but certain that there was no town on the site of Chepstow before Norman time. There is nothing in Domesday to suggest the contrary. The town is off the line of the Roman road, and the earlier grants in Liber Llandavensis of pre-Saxon times do not indicate the existence of a town. The Castle of Estrighoiel (or Striguil) gave its name to the town that arose at its side ; and it continued to be known solely by that name in every extant charter or document down to the beginning of the 14th century, when first the town is spoken of as Chepstow.

On the other hand, in early post-Roman times, we know of St. Tathan's College at Caerwent. From the Liber Llandavensis we find that this was the place in the time of Bishop Pater (943) of the meeting of the Bishop and the magnates, attended by the " Abbas Gwentonæ urbis " ; and in time of Bishop Gucann (982) we have mention of " Eidef lector urbis Guenti." Again, in the time of Roger de Breteuil (son of Fitzosbern, who built the Castle of Striguil), described as " Dominus Guenti," we find " John the priest, son of Run of Caerwent." In the list of Procurations, dating about 1200, we have in order " Caldicot, Portskewet, *Caerwent*, Shirenewton, and *Strugull*." In the Synodalia of about the same date a similar list mentions both Caerwent and Strugull ; and so again in the 13th century list of tithes. Under the same name our city appears in the Taxatio of Pope Nicholas (1291).

In the Wentwood Survey of 1271 we find the presentment that " the Vicar of Caerwent alone of all the churches in Netherwent has

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housebote and haybote by prescription, because he bringeth the Book of the Gospels to every Court of Striguil."[2]

Again in 1483, William of Worcester, in his Diary among his notes on Tintern and Chepstow, mentions "Caerwent" as being five miles from "Chepstow."[3]

It remains that there is no document or contemporaneous history in which Chepstow is spoken of by any name taken from Caerwent or similar to it; that there is no period in which, consistently with extant documents, such a transference could have occurred; while we have continuous evidence of each town being known by its own proper name.

2. In connection with this reference to the use of the Book of the Gospels in the ratification of grants and decrees and other solemn acts, I may notice the Saxon record printed in the Dean of Hereford's paper on the Cathedral Archives (Woolhope Transactions, 1901, pp. 109-110). The closing words of it should read "Thurcil caused it (*i.e.* the grant) to be laid *on* a Christ's Book." True that the record is found actually copied into the Book; but the words of the original are plain. So in an extant Charter by Richard of Cormeilles to Monmouth Priory, the donor is stated to have laid it *on* the "textus sancti evangelii"; and so it was offered by Robert, Bishop of Hereford, over the Altar. So again in the grant to Llandaff of St. Kinsmark, near Chepstow, the King of Gwent is recorded as having walked the boundary, with the Bishop and others, carrying the Book of the Gospels on his back.

With this use I connect the direction in the Marriage Service that the ring should be laid "on the Book"; that being the symbolical act of "livery of seisin," accompanied by the formal words of a legal feoffment "to have and to hold, etc."; marriage being in truth the creation and grant of an "estate," not a "contract."

3. This Diary is among the Parker MSS. in the possession of Corpus Christi Coll., Cambridge.

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Woolhope Naturalists' Field Club.

Annual Winter Meeting for the Election of Officers, Tuesday, December 15th, 1903.

The Annual Winter Meeting for the Election of President and Officers for the ensuing year, 1904, was held in the Woolhope Club Room, Hereford, on Tuesday, December 15th. The usual contingent accounts were presented and passed at the Committee Meeting.

The type-written copy of the earliest papers connected with the origin of the Woolhope Naturalists' Field Club was presented, and it was resolved that the Papers and Transactions, from 1852 to 1865 inclusive, be printed at the cost of 5s. to subscribing Members, and that after publication the price be raised to 7s. 6d. for Members of the Club, and 10s. to non-members.

Mr. T. Hutchinson was elected President for 1904. The four Vice-Presidents elected were Mr. H. Southall, Mr. Philip Baylis, Mr. James Davies, and Mr. James G. Wood.

The Central Committee and other Honorary Officers were re-elected.

The Rev. J. O. Bevan was again appointed Delegate to the Corresponding Societies, British Association, for their meeting at Cambridge, with Dr. T. A. Chapman as Corresponding Member. Mr. Bevan's Report of the British Association Meeting at Southport was presented.

The Rev. J. O. Bevan and Mr. Thomas Blashill were appointed Delegates to the Archæological Congress.

A letter was read from Dr. Gerald Leighton offering to deliver a lecture during his re-visit to Herefordshire, at Christmas. Owing to numerous engagements at that busy period of the year the offer was declined with regret, and many thanks.

Notes upon the discovery of a Columbarium in the Tower of the Church, Sarnesfield, were presented by Mr. George Marshall, of the Batch, Sarnesfield.

A list of the Books received during 1903, by purchase and by interchange with kindred Societies, was presented.

The following Members were present :—Mr. H. Southall, President; the Revs. H. M. Evill, Ed. Harris, D.D., Preb. Wm. H. Lambert, and G. M. Watkins; Messrs. S. H. Bickham, H. C. Beddoe, C. P. Bird, J. Carless, R. Clarke, James Davies, J. Hatton, T. Llanwarne, J. Probert, and Alfred Watkins, with Mr. T. Hutchinson and Mr. H. Cecil Moore, Honorary Secretaries, and Mr. James B. Pilley, Assistant Secretary.

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REPORT OF REV. J. O. BEVAN, DELEGATE OF CORRESPONDING MEMBERS BRITISH ASSOCIATION, SOUTHPORT, SEPTEMBER, 1903.

The Southport Meeting was distinguished by the trenchant criticisms in the President's Address on our present state of Education, and by his appeal for more Institutions of University rank, and for greater efficiency in existing Institutions.

The President of the Education Section also declared that instead of 30 millions being spent annually on national education, the sum ought to be 100 millions. Beyond this the Sectional Presidential addresses contained nothing startling.

The proceedings in Section A (Mathematical and Physical) were, in part, occupied with discussions on radio-activity; in E (Geographical Section) on Antarctic exploration; in F (Economic Science and Statistics Section) on the Fiscal question; in H (Anthropological Section) with accounts of discoveries in Crete and Egypt; in L (Educational Science Section) with School problems relating to Hygiene and Curricula.

The Debates at the Conference of Delegates of Corresponding Societies were fully reported, and will be in your hands before long. Your delegate had the honour of being appointed Vice-President by the Council of the Association.

There were four communications made to the Conference, one by Sir Norman Lockyer, in support of his Presidential theme; one by Dr. Smith on "The Methods and Results of a Botanical Survey of Counties"; the third by Mr. Holmes, in respect of certain omissions from the latest Ordnance Map of Kent; and the last by Mr. Cole, on "A Suggestion with respect to Exploration and Registration work for County Local Societies."

The delegates endorsed the President's recommendations that a Guild of Scientists should be formed to bring before the public mind the necessity of a more fully developed and practical scientific education. They promised to aid in bringing out a Scientific Societies' Handbook. They acquiesced in the suggestion that efforts should be made to instruct teachers in Elementary and Secondary Schools in Nature Study, so as to render them able to bring this subject under the notice of their pupils, so as to stimulate their interest and their activity. Mr. Cole's suggestion was referred to the Committee to help forward in the way they considered best.

It was regretted that so little was done by Corresponding Societies in respect of original investigations. In this connection may I be allowed to commend to the notice of our members Dr. Smith's paper respecting a Botanical Survey, and suggest that such a work as that attempted by him in the North should be undertaken in Herefordshire. Many of the members of our Club are presumably distinguished in

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Botanical research, and much material is ready to hand. The Botanical Survey would be a fitting complement to the Archæological Map. The author, at the Yorkshire College, Leeds, would doubtless gladly furnish specimens and all information as to scope and style of the proposed work.

Files of papers and of Association literature, together with copies of Presidential Addresses, have been forwarded by me to the Secretary.

We had the advantage of the presence in Southport of Mr. Southall, our President, who will doubtless be ready to supplement this Report.

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Woolhope Naturalists' Field Club.

1903.—Books Received by Purchase, Inter-Change with Kindred Societies, or Otherwise.

British Association.—Report for 1902. Belfast Meeting.

British Mycological Society.—Transactions for 1902.

British Rainfall, 1902, by H. Sowerby Wallis and Hugh Robert Mill.

Caradoc and Severn Valley Field Club —Vol. III., No. 2.

Caradoc and Severn Valley Field Club.—Record of Bare Facts for 1902.

Clifton Antiquarian Club.—Proceedings of. Vols. I., II., III., IV. (1884 to 1889) bound.

Clifton Antiquarian Club.—Part XIII., Vol. V., Part I., 1900, and Part XIV., Vol. V. Part II.

Cardiff Naturalists' Society.—Report and Transactions, Vol. XXXIV., 1901-1902.

Cardiff Naturalists' Society.—The Gellygaer Excavations by John Ward, F.S.A.

Caerwent, Monmouthshire (the site of the Romano British City of Venta Silurum). Excavations in 1902. Reprinted from "Archæologia."

Cotteswold Naturalists' Field Club.—Proceedings of. Vol. XIV., Part II. for 1901.

Cotteswold Naturalists' Field Club.—Vol. XIV., Part III. for 1902.

Geologists' Association.—Proceedings of. Vol. XVIII. Part I.

Geologists' Association.—Proceedings of. Vol. XVIII., 1903. Parts II. and III.

Geological Society.—Quarterly Journal, Vol. LIX., Part I, No. 233; Part II., No. 234; Part III., No. 235; and Part IV. No. 236, with Index.

Geological Society.—Library. Geological literature added during the year ended December 31st, 1902.

Field Naturalists' Quarterly.—Vol. II.

Marlborough College Natural History Society.—No. 51, for the year ended Christmas, 1902.

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"Pilgrimages to Old Houses," by Fletcher Moss. Presented by Mr. James Watts (S. and J. Watts and Co., Manchester), per Mr. T. Southall.

Scientific and Learned Societies' Year Book, 1903.

Worcestershire Naturalists' Club.—Transactions of. From 1899-1902, Vol. III., Part I.

Yorkshire Naturalists' Union.—Part 28. The Fungus Flora of Yorkshire.

Yorkshire Naturalists' Union.—Part 29. 40th Annual Report. List of Members, 1901.

Yorkshire Naturalists' Union.—Part 30. 41st Annual Report. List of Members, 1902.

FROM ABROAD.

Germination de l'Ascospore de la Truffe par M. Emile Boulanger, 19 Quai Bourbon, Paris.

The Geological Institution of the University of Upsala.—Bulletin of Vol. 5, Part 2, 1901. No. 10.

America.—Bulletin No. 6, 1903. Lloyd Library. Botany, Pharmacy, and Materia Medica; Reproduction Series, No. 3, from C. G. Lloyd, 224 W., Court Street, Cincinnati, Ohio, U.S.A.

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METEOROLOGY.

Mr. Southall has forwarded to us, for publication, the following remarks under the heading of Our English Summers.

OUR ENGLISH SUMMERS.

By H. Southall.

When treating of the continued dryness of the sixteen years ending 1902, I ventured to suggest, not to prophesy, that we were then probably on the eve of a change to a spell of much wetter weather than that generally experienced in Herefordshire and other parts of the West Midland Counties, say from 1887 to 1902 inclusive. It may be known to some, that notwithstanding the wet December of 1901—and the excess of rain in August last year (1902), the total rainfall for the two consecutive years was much below the usual average for this district. Thus at Ross, 1901 yielded 23·45 inches; 1902 yielded 23·79 inches. The only other instances of as small a quantity since 1818 having been the following :—

	1850-51.	1854-5.	1863-4.	1892-3.	1895-6.	1898-9.	1901-2.
	22·70	19·42	25·27	22·81	25·96	21·42	23·45
	24·58	25·12	19·22	20·13	21·11	25·44	23·79
2 years	47·28	44·54	44·49	42·94	47·07	46·86	47·24

I should say that the average fall for the twenty years 1867-1886 was 31·86 inches; it will be noticed, also, that four out of the seven instances quoted above occurred in the last ten years, and only three in the previous seventy-five years.

The first ten days of 1903 showed a marked difference; 2·48 inches of rain falling from the 1st to the 10th January. This has only been equalled three times in at least 50 years—1877, 2.75 inches; 1867, 2·70 inches; 1869, 2·54 inches. These years being only just a trifle in excess of 1903. The next six weeks were just as dry, only 1·10 inches having been registered; but in the 38 days ending March 31st, 5·42 inches fell, making the total for the first three months of the year nine inches.

From April 1st to April 24th we had another dry period, only about a third of an inch falling in the whole twenty-four days.

Then from April 25th to September 2nd inclusive, or for one hundred and thirty-one days, the amount of water deposited at Ross (and probably the other parts of Herefordshire were similarly favoured) was no less than 16·47 inches. Now, since the fall of one inch of water upon one acre weighs 100·993 tons, the fall of 16·47 inches upon 10 acres would be equivalent to the weight of 16,633·5471 tons. I will not trouble you with what this means over the whole area of the Wye Valley, but it means a prodigious quantity.

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The following is the amount from January 1st to September 2nd at my station, and also from Lynhales, near Kington, and from Underdown, Ledbury; Mr. Stephen Robinson and Mr. Spencer H. Bickham having kindly sent me their observations:—

1903.	The Graig Ross.	Lynhales.	Underdown, Ledbury.
January	3·51	... 2·98	... 2·98
February	2·15	... 2·23	... 1·66
March	3·34	... 5·08	... 3·29
April	2·31	... 1·84	... 1·78
May	4·22	... 3·63	... 3·61
June	2·81	... 2·51	... 3·31
July	2·52	... 2·64	... 2·65
August	3·53	... 5·24	... 2·84
September 1 ...	1·02	Thunder- ·45	...
,, 2 ...	·40	storm ·34	... ·94
	25·81	26·94	23·06
Average 1890—1899	15·53		14·88
	10·28		8·18

The difference at the different stations arises principally from the local or partial character of many of the heaviest storms.

The following figures will show how 1903 compares with the ten wettest similar periods of 131 days (April 25th to September 2nd), from 1859 to 1903, or the 45 years of my recorded observations at Ross:—

Year.	Inches.	Rainy days not less than ·01.
1879	16·73	inches on 77 days
1878	16·52	,, 70 do.
1903	16·47	,, 77 do.
1872	15·62	,, 61 do.
1860	14·23	,, 86 do.
1891	13·95	,, 83 do.
1875	13·91	,, 65 do.
1882	13·72	,, 82 do.
1888	12·65	,, 76 do.
1886	12·53	,, 56 do.

This table shows that 1903 was the same very nearly as 1878 and 1879.

The total for 1878 was swelled by the large amount in August; 1·96 in., a record for the month, but nearly half of this (3·76) fell in 76 hours from 8 p.m. 22nd to noon 23rd.

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Again, that for 1872 includes a record July, with 7·74 inches, the result largely of three very heavy thunderstorms, one yielding more than two inches. In 1875 again, on July 14th, Herefordshire and a tract of country from the North of Cornwall and Devon to the Humber was deluged by a tremendous downpour of from three to four inches (more than five inches were gauged at Tintern). This caused much damage to crops from overflow of rivers, and also from the crops being beaten down. In 1886 again, on May 12th and 13th, incessant rain for sixty hours produced great floods in Herefordshire, and especially in Shropshire. The Teme and Wye were much above their banks. The flood in the former being the highest on record, and exceeding even the most memorable one of 1770.

In the years 1860, 1879, and 1888, the character of the summers was somewhat different in each case, being characterised by cold, sunless days, not a single hot one in either summer, and with almost constant rain. In this respect resembling 1816, when, as in 1879, corn was still standing ungathered at Christmas.

In these years the intervals of fine weather were very short; a great factor, of course, in harvesting.

In 1903, after a very late autumn in 1902, and an extremely warm winter, especially February and March. In February there were only three frosts at four feet above the ground (the 2nd, 30·8; 13th, 30·9; and 18th, 29·7), or an aggregate of less than five degrees in the whole month, as compared with February, 1886—26 nights and 88 degrees, and 1888, 21 nights and 108 degrees. March was unique in having no frost to record on any night at four feet. On April 16th, however, when we had hoped that winter was over and gone, we had severe frosts every night till the 26th, except the 21st; on the 18th, showing 10½ degrees of frost. This frost was very destructive. The fruit blossoms, which were very forward, were largely destroyed, and plants like peonies, which are seldom affected by spring frosts, were quite done for. Azaleas and magnolias just coming into specially good bloom were completely spoilt. On April 25th, with the departing of the frost, came the rain. Instead of a third of an inch in 24 days, we had more than five inches in 22 days, and thus began the wet summer of 1903. On May 17th, however, till the 27th, we had a welcome break of eleven days with scarcely any rain, and then in the next nineteen, or from May 28th to June 15th, we had another spell of wet, producing 3·83 inches. Then came a most welcome change. From June 16th to July 15th, or 30 days, we had splendid weather, with only 0·29 inch of rain, or what is called by meteorologists a "partial drought."

As a consequence of this the farmers had the satisfaction of securing one of the best and heaviest crops of hay ever remembered, and got together extremely cheaply and quickly, as well as in good condition. During this time the only warm weather of the summer occurred.

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The following are the readings of maximum shade thermometer above 80 degrees :—June 27th, 86·1 degrees ; July 2nd, 80·7 ; July 9th, 82·2 ; July 10th, 85·2 ; July 11th, 81·5 ; and four more days from 74·2 to 78·6 degrees.

It must be remembered, however, that in this county we have fared much better than in the Thames Valley. Nothing appears to try the temper and patience of an Englishman more than does wet weather in the months of July and August. Probably in no recent year have so many cricket matches had to be postponed or drawn in consequence, so many picnics and garden parties spoilt, and many who have left home on their holidays for a "complete change" have experienced it in a way they had not anticipated. The fact is that we have had a succession of extremely fine seasons of late. Last year was not a favourable August, and this year we have even fewer fine, bright, and warm days. One remarkable feature has been the extreme diversity of weather experienced in places not far distant from each other.

It has not unfrequently happened that while London was flooded by heavy rain, we had bright fine weather, and lately when they had brilliant weather with a temperature of 84 degrees, we had overcast skies and a maximum of 63 degrees.

In spite of this the general health of the country never was better.

The gardens were never gayer or more luxuriant in August than this year.

The destruction of the fruit crops by the frosts of April and June, and which were felt more because of the extreme warmth of February and March, have been undoubtedly a great loss to many growers.

If, however, we should have a fine September, even now our crops will not prove nearly so defective as some have anticipated ; and if it causes some to take measures either by more shelter or other means to protect our more tender products, the lesson taught us by our recent experience may yet be of some value.

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RAINFALL IN HEREFORDSHIRE IN 1903, TEMPERATURE, AND DUSTFALL.

By H. Cecil Moore.

As previously expressed on page 92, I repeat the request that some one or other of our Meteorological observers will undertake the work of tabulation of the annual meteorological records from the different localities in the county, in such manner as to render them readily comparable. The circumstances of my local habitation, with no fit position for a Rain Gauge, a Glaisher's Stand, or a Stevenson Screen, preclude me from joining their rank. At the eleventh hour, I find myself again called upon to make a summary for the year: experts must please accept my apology for the proposed systematisation in the accompanying Table.

In Herefordshire there are many observers who take meteorological registrations; moreover I question whether any county can exhibit a series of observations of rainfall extending over 86 years, as we possess in Herefordshire. Fortunately these records have fallen into the hands of Mr. H. Southall, F.R. Met. Soc., who, in the earlier pages of this volume, pages 2 to 18, in his paper "Weather in Herefordshire during the Nineteenth Century," has, with great painstaking and assiduity, collaborated statistics dating from the year 1818. Mr. Southall's tabulated observations extend from 1859 to the present day, a series of 45 years; taken at Friends' Place, 170 feet above sea level, near the Market Place, Ross, until August, 1864; and since that date at The Graig, Ashfield, Ross, 213 feet above sea level. His personal observations go back to 1830, a period of 73 years.

Herefordshire is surrounded by hills, rising in the western boundary to the elevation of 2,306 feet, in the north-west to 1,394 feet, and in the eastern boundary to 1,114 feet in the Herefordshire Beacon.

We must bear in mind that the greatest rainfall in our kingdom is along our western and north-western coasts, gradually decreasing as we proceed further east. No statistics are available to me from the western boundary of the county, upon the hilly districts of which portion we naturally expect the heaviest rainfall. The accompanying Table is compiled from statistics supplied by observers residing in what may be termed Central Herefordshire, within the average radius of 9 to 10 miles from Hereford as a centre.

From page 4, line 24 *et seq.* of Mr. Southall's paper, above referred to, we find, from calculations extending over a period of 70 years that the average annual rainfall over central Herefordshire may be estimated approximately at 30 inches.

Taking the average of eight decades, 1821 to 1900, as given on page 215, by Sir James Rankin, we find the average rainfall of each decade 30·444 inches, at Much Dewchurch, 6 miles S. by W. from Hereford.

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Again, in Mr. Southall's paper, page 11, the average Rainfall at Ross for the 30 years, 1867 to 1897, was exactly 30 inches.

The greatest annual rainfall recorded in the *Transactions* of the Woolhope Club is 43·53 inches. See *Transactions* 1873, page 42, line 18. This is reported to have been registered at Titley, 16 miles N.W. of Hereford, as the crow flies, in the year 1852. In the same year, 1852, the register at Ross, taken by Mr. Purchas for the first four months of the year, and by Mr. Herbert for the remaining eight months, amounted to 42·70.

The next greatest records exceeding 35 inches are as below :—

41·48	in	the year	1872
40·63	,,	,,	1839
39·78	,,	,,	1841
38·94	,,	,,	1886
38·57	,,	,,	1875
38·40	,,	,,	1882
36·30	,,	,,	1876
35·49	,,	,,	1880

Taking England and Wales as a whole, the rainfall of 1903 was exceeded by that of 1852 and 1872. What rendered it more conspicuous was not only the shortness of our memories, and the interference with our personal comforts, every one of our Field Meetings of the year being somewhat marred by downpours of rain, but the fact of its following a consecutive period of many dry years. Certainly it was sufficiently unusual to justify us in calling it a remarkably wet year, and in publishing a Table of the maximum rainfall in Central Herefordshire.

The accompanying Table is summarised from the monthly Rainfalls published in the *Hereford Times* from 16 stations, verified separately by the observers themselves, whom I take this opportunity of thanking individually for their replies to my applications. To these I have added 6 more stations, at which the registers were taken as follows :—On Broomy Hill, Hereford, by Mr. Matthews; by the Meteorological Observers at St. Michael's Priory, Belmont, two miles S.W. by W. from Hereford; at Wellington Heath, and at two different stations at Ledbury, all three about 12 or 13 miles eastward; and at Dilwyn, 11 miles N.N.W.

Taking Hereford as a centre, the stations are arranged in consecutive order, starting from Leominster due north, thence, in the apparent way of the sun, by north-east round the circle unto the north-west.

The name of the observer is given, and, when it has been known, the height of the rain-gauge above the sea level. The direct distances from Hereford are given in miles, as the crow flies.

The most remote of the stations is Kington, 16 miles N.W., and it is from this place of observation that the largest register is given. The places where more than 40 inches fell are :—

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Kington—Gravel Hill	...	47·50	inches in	238	days.
Lynhales—Lyonshall	...	43·73	,,	194	,,
Bryngwyn—Much Dewchurch		42·38	,,	182	,,
Putley Court—Putley	...	40·31	,,	217	,,

In Hereford City 35·05 inches were registered on Broomy Hill in 220 days, and 35·24 inches in 200 days at Richmond Place, Edgar Street. The smallest amount registered was at Fownhope, Morney Cross, 32·43 inches in 180 days.

A glance at the Table shows that rain fell on 200 or more days at 15 out of the 22 stations. At Caerswall (Much Marcle) some rain fell on 248 days.

It also shows that October was the wettest month of the year, the largest amount of rainfall 9·57 inches, being recorded from Lynhales. Reports of ·01 or more rain having fallen on 31 days of October are given from Much Marcle and Ross. It has also been found, taking England and Wales as a whole, that, with the possible exception of the year 1865, October, 1903, has been the wettest since *British Rainfall* was founded in 1860: indeed, an examination of records back to 1800 has only produced one year, namely, 1855, which might claim a place as a second exception.

A map on page 170 of Symons's Meteorological Magazine for 1903 shows that the areas principally affected were in the north-west; and on page 173 the reports of the October rainfall, exceeding a fall of 20 inches, are given from fifteen stations, ranging from Skelworth Bridge (Ambleside), in Division VIII., 20·22 inches, and Seathwaite (Cumberland), in Division X, 25·10 inches, to the Stye, in the same Division, 32·50 inches.

At Borrowdale, Seathwaite (Cumberland), according to a Table in a letter from Hugh Robert Mill, 62, Camden Square. London, N.W., published in *The Times* of January 11th, 1904, the rainfall in 1903 amounted to 173·70 inches, or 40·17 inches above the average (133·53) of the 30 years, 1870 to 1899.

Some of our Members have contributed notes to the local papers on the local rainfall, which are deserving of record in our *Transactions*. The following statistics were published in the *Hereford Journal* of January 9th, 1904, supplied by Sir James Rankin, Bart., M.P.

The total rainfall registered at Bryngwyn in 1903 was 42·38 inches. This is the greatest fall since 1872.

The greatest fall in 24 hours, 1·78 inch, occurred on 24th August. During the last 30 years, there have been five years in which a greater fall occurred in 24 hours, namely :—

3·11	inches on	14th July, 1875.
2·64	,,	12th May, 1886.
2·20	,,	30th December, 1900.
2·19	,,	23rd August, 1878.
2·07	,,	4th October, 1880.

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On 182 days in 1903, 0·01 inch or more fell. During the last 30 years, there have been 9 years in which 0·01 inch or more rain fell on more than 182 days, namely :—

210	days in	1894
199	,,	1882
198	,,	1891
188	,,	1883
188	,,	1886
186	,,	1879
186	,,	1897
185	,,	1900
183	,,	1890

The following are the rainfall averages for the last 8 decades of the last century ; and 3 years of the present century :—

Dates. Decades.			Averages. Inches.
1821—30	...	...	31·359
1831—40	...	...	31·267
1841—50	...	...	30·824
1851—60	...	...	30·656
1861—70	...	...	26·025
1871—80	...	...	33·885
1881—90	..	...	29·960
1891—1900	..	...	29·578
Three years of the present century			
1901—1903	...	...	31·953

It will be found on calculation that the average rainfall of the 8 decades at Bryngwyn is 30·444 inches.

To Mr. Spencer H. Bickham we are indebted for information from the Ledbury district as follows :—

LOCAL RAINFALL IN 1903.

By Spencer H. Bickham.

Two years ago I published some comparative records of the rainfall in this district for the preceding 20 years. (*Transactions*, 1901, p. 245). It may be of interest to record the rainfall at six stations in this vicinity for the very wet year of 1903, and to give the falls that have exceeded one inch in 24 hours.

It will be seen that the year has not been remarkable for heavy falls in one day, but for several very wet periods, and that the fall at Ledbury has been very much less than at the other four stations. Ross, Much Marcle, and Putley get on an average from 1 to 1½ inches more rain in the year than Ledbury, but in 1903 Ross had an excess of 4·35 inches, Much Marcle of 5·45 inches, and Putley of 6·54 inches. I

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think the reason may be found in the fact that there was, during part of the year, a prevalence of thunderstorms, which rarely break immediately over Ledbury, but pass along the Much Marcle and Malvern Hills.

Mr. Southall, of Ross, states that the year has been the wettest since 1880 with two exceptions, viz., 1882, when 38·40 inches, and 1886, when 38·94 inches were registered, and exactly the same remark applies to Ledbury, where the fall in 1882 was 35·65 inches, and in 1886, 34·50 inches.

RAINFALL IN 1903 AT THE UNDERMENTIONED STATIONS.

Month.	Wellington Heath Vicarage. 500ft. above sea level.	Underdown, Ledbury. 367ft. above sea level.	Orchard-leigh, Ledbury. 180ft. above sea level.	Caerswall, Much Marcle. 422ft. above sea level.	Putley Court. 290ft. above sea level.	The Graig, Ross. 213ft. above sea level.
January	3·20	2·98	2·89	3·56	3·38	3·51
February	1·48	1·66	1·43	1·87	1·92	2·15
March	3·32	3·29	2·95	3·48	3·67	3·34
April	2·26	1·78	1·83	2.45	2·20	2·31
May	5·72	3·61	3·78	4·41	4·95	4·22
June	4·16	3·31	3·38	2·71	3·05	2·81
July	3·08	2·65	2·30	3·17	3·42	2·52
August	3·12	2·84	3·68	3·86	3·71	3·53
September.	3·35	2·85	2·37	3·26	3·62	3·04
October	6 33	5·89	5·89	6·79	6·43	7·40
November.	1·54	1·37	1·33	1·59	1·77	1·18
December.	2·12	1·54	1·78	2·07	2·19	2·11
	39·75	33·77	33·61	39·22	40·31	38·12
Number of days when rain fell	190	207	209	248	217	219

At Ross and Much Marcle rain fell on 31 days in October. No previous month since 1859, when the Ross gauge was started, has had 31 wet days.

FALL OF 1 INCH OR MORE IN 24 HOURS.

	Wellington Heath Vicarage.	Underdown, Ledbury.	Orchardleigh, Ledbury.	Much Marcle.	Putley Court.	Ross.
January 4	—	—	—	1·01	—	—
May 21	1·50	—	—	—	—	—
June 10	1·24	1·03	—	—	—	—
June 14	1·40	1·11	1·08	1·00	1·08	1·25
July 19	—	—	—	—	1·24	—
September 1	—	—	—	—	—	1·02
October 14	—	—	—	—	—	1·39
October 27	—	1·02	1·04	1·17	1·07	—

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The following observations of 29 years' Rainfall at Caerswall, Much Marcle, are taken from the *Hereford Times* of January 16th, 1904.

29 YEARS' RAINFALL AT CAERSWALL, MUCH MARCLE (422ft. above sea level). Observer, J. A. H. Charles.

Year.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total.	Avge.	No. of days on which Rain fell.
1875	3·90	1·77	·94	1·28	2·44	2·61	6·97	2·15	3·39	5·63	5·00	1·73	37·81		188
1876	2·27	1·96	3·00	2·39	·38	·71	·94	2·29	5·38	2·65	4·74	6·65	33·36		154
1877	3·69	1·33	1·61	2·62	2·33	1·21	3·73	3·45	2·13	1·66	3·29	1·71	28·76		211
1878	1·34	1·57	·70	2·97	4·67	2·18	·89	7·40	2·07	4·05	2·78	1·98	32·60		187
1879	2·58	3·70	·73	2·13	2·28	5·87	2·67	6·46	3·10	·93	·96	·76	32·17		177
1880	·67	3·52	1·03	1·29	1·96	2·93	4·76	·59	3·34	5·28	2·32	3·40	31·09		157
1881	1·18	3·56	1·92	·80	1·11	3·08	1·34	4·52	1·71	2·33	3·16	2·56	27.27		164
1882	2.65	3·26	1·04	3·60	2·14	2·95	4·76	2·68	2·40	5·46	3·93	3·54	38·41		198
1883	3·45	3·30	.97	·98	1·46	3·97	3·09	·89	4·50	3·35	3·97	·64	30·57		182
1884	2·67	2·22	2·31	1·21	·83	3·07	3·03	2·47	1·27	1·00	2·05	2·38	24·51		162
1885	2·35	3·39	1·41	2·31	2·65	2·59	·45	2·09	3·42	2·90	3·19	1·13	27·88		174
1886	4·77	1·23	2·67	2·44	5·66	1·05	2·87	1·50	2·43	4·55	2·53	3·73	35·43		192
1887	2·55	·41	1·00	1·02	1·83	1·26	1·12	1·81	1·71	2·53	2·38	1·90	19·52		137
1888	·63	·88	3·08	1·56	·92	3·05	6·31	2·40	·81	·70	8·11	2·95	31·40		177
1889	·72	1·54	3·26	5·13	4·33	·37	2·76	2·84	1·85	3·09	1·05	1·78	28·72		171
1890	2·88	·58	1·06	1·15	1·82	1·72	2·89	2·85	2·02	1·42	2·21	1·54	22·14		150
1891	1·79	·06	1·92	1·61	3·61	2·95	2·09	4·51	1·29	6·92	2·55	3·36	32·66		185
1892	1·83	1·83	·71	·78	1·58	1·98	4·36	3·10	2·76	1·77	2·42	1·07	24·19		155
1893	2·17	2·87	·34	·20	2·20	1·28	3·04	1·37	1·02	2·27	1·19	3·22	21·17		150
1894	2·30	2·27	1·26	1·98	3·18	2·24	2·59	2·82	3·03	3·81	3·76	2·09	31·33		179
1895	4·86	·15	1·90	2·44	·79	·94	2·44	2·52	·57	2·60	4·47	2·12	25·80		149
1896	·51	·26	2·35	·94	·28	1·41	1·13	1·33	5·39	2·41	·69	3·26	19·96		155
1897	2·15	2·50	3·32	1·73	1·28	2·74	2·67	3·99	2·48	1·43	2·22	3·33	29·84		180
1898	·29	1·31	·51	1·93	4·48	·92	·95	2·05	·42	4·05	1·73	2·62	21·26		149
1899	4·41	2·61	·47	2·05	2·74	1·93	·49	1·25	2·91	2·84	2·24	2·58	26·52		152
1900	3·18	5·07	1·10	1·35	2·37	1·34	2·31	2·94	.42	3·03	1·93	6·10	31·14		173
1901	1·39	·90	2·11	2·75	1·10	2·72	3·05	2·06	1·80	1·13	·79	3·77	23·57		166
1902	·83	1·16	1·59	2·14	2·26	3·38	1·05	3·64	2·03	3·32	2·74	1·55	25·69		188
1903	3·56	1·87	3·48	2·45	4·41	2·71	3·17	3·86	3·26	6·79	1·59	2·07	39·22	28·53	248

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TEMPERATURE IN 1903.

As a whole, the year was extremely mild. February was remarkable (see Mr. Southall's paper, *antea*) for only three frosts at 4 feet above the ground, and these not severe, in the whole month; whilst March was unique in not giving a single record of frost at four feet from the ground.

The high temperature of the months of February and March imparted to the country a prematurely spring-like aspect.

The advanced state of vegetation was cruelly spoiled by the nine frosts which occurred in the ten nights between April 16th and 26th.

From page 31 of Symonds' Meteorological Magazine we read that in London (Camden Square) February was the warmest winter month since observations commenced in 1858. The remarkably high mean temperature on 25th March was found worthy of record on page 43. The maximum on a Glaisher stand being 67·9 degrees; the maximum temperature being reached nearly two hours after sunset. The 9 p.m. reading was 64·2 degrees. The summer was cold and unseasonable. The highest shade temperature recorded by Mr Southall was 85·2 degrees on July 10th.

Higher degrees are frequently recorded in newspapers, but are generally unreliable. There is much ignorance of the extent to which thermometers are affected by the retained and reflected heat from roads, pavements, houses, walls, and other objects in the vicinity of the thermometer.

Glaisher stands and Stevenson's screens are the standard shade exposures, and their proper position should be certified by an expert before being adopted.

Our sensations of temperature are very deceptive. We are prone to exaggerate our estimates above the actual readings of the standard thermometer properly situated. As an example of the highest temperature in our country I append the records of recent years in London.

Date.	Shade Temperature.
July 15, 1881	97
August 11, 1884	94
July 16, 1900	92
July 19, 1900	92
July 19, 1902	90
July 14, 1902	87
July 10, 1903	85

Personally the highest shade temperature to which I can testify is 120 degrees, at Aden, Arabia, in the year 1858.

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THE GREAT DUST-FALL OF FEBRUARY, 1903.

Local Dust-fall of December, 1903.

From a very large body of evidence, a large fall of atmospheric dust or of muddy rain, similar to what occurred in the south-west of England and Wales on January 22nd, 1902, fell over a very large area of the southern counties of England and Wales on the date, as given in reports of more than 200 cases in 32 counties, generally of Sunday, 22nd February, except in the south-east of England, where the dust fell dry on the 21st, and with rain on the 22nd.

Reference to Symonds' Meteorological Magazine for March, 1903, informs us that it was far more intense than the fall on January 22nd, 1902, and quite as frequently observed in the form of a dense dry fog as in that of muddy rain. The Cornish dust-fall of January, 1902, is recorded *antea* on page 93.

The simultaneous fall over England, Holland, Belgium, Germany, Switzerland and Austria, suggests that the origin lay somewhere beyond the borders of Europe—possibly from the deserts of northern Africa.

It fell most thickly in two areas, South Wales and the Weald district of Kent, Surrey, and Sussex. See the map on page 22 of Symonds' Meteorological Magazine, 1903.

Amongst the places in Herefordshire sending records to Dr. H. R. Mill, 62, Camden Square, London, N.W., we observe only two stations, namely Dilwyn and Kington.

The dust was found in many instances as a deposit in the rain water collected in rain gauges ; in others it was seen on window panes upon which the rain had beaten ; and in some cases it was sufficiently large to be seen upon the ground, or upon objects open to the sky, and sometimes without the agency of rain for its deposition. Amongst other sources of information were the Cards which had been exposed in the Campbell Stokes Sunshine Recorders, on many of which the red dust had left indelible marks, as well as specimens of the dust itself.

One noteworthy fact (Symonds' Met. Maga. January, 1904, p. 211) may be mentioned—namely, that in nearly every instance, in both falls, the dust was found upon the *eastern* side of the Card, as a result of the dust having been carried along by a *westerly* wind.

" It is possible, and indeed probable, that with more precise observations of dust-fall, and with more reliable continuous records of pressure, our knowledge respecting atmospheric circulation may be considerably extended and improved."—*Ibid*, p. 211.

Local dust-falls, limited to a comparatively small area, are of occasional occurrence. For instance, we have received information from Yarkhill, 6 miles east of Hereford, of a fall of what the local residents called " black rain," on Wednesday, 23rd December, 1903.

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On the following morning the Rev. A. G. Jones, Vicar of Yarkhill, observed a dark coloured scum upon the surface of the soft water in the rain-water tubs; also a sprinkling of black dust upon the roads extending from Shucknall in the west to Newtown, where it was of greater thickness, three miles north-east. In corroboration of the above, Dr. J. H. Wood, of Tarrington, observed black dust on the roads extending from Tarrington to Newent, and his brother, Dr. Miles Wood, observed it at Ledbury, eight miles north of Newent—or a total distance from north to south of about twelve miles from Newtown to Newent, and width of seven miles. The dust cloud probably originated in the Pottery districts, the wind being N.E. to N.N.E.

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STATION.	
Height in fee above sea leve	
Situation and distance in mil from Hereford the centre.	
Observer.	
January	
February	
March	
April	
May	
June	
July	
August	
September	
October	
November	
December	
Total	
Number of days on whic 0·1 inches or more rain fell	

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1904.

Woolhope Naturalists' Field Club.

ANNUAL MEETING, THURSDAY, APRIL 7TH, 1904.

The Annual General Meeting was held in the Woolhope Club Room on April 7th. There were present:—Mr. H. Southall (the retiring President), Mr. T. Hutchinson (the President Elect), Revs. A. J. Capel, W. S. Clarke, E. J. Holloway, Preb. W. H. Lambert, A. Ley, W. E. T. Morgan, K. O'Neil, H. B. D. Marshall, E. Gedge, G. H. V. Robinson, and M. G. Watkins; Messrs. J. Carless, R. Clarke, T. S. Aldis, C. Fortey, S. H. Bickham, W. P. J. Le Brocq, J. Probert and Alfred Watkins; Mr. H. Cecil Moore (Hon. Sec.) and Mr. James B. Pilley (Assistant Secretary).

The general financial statement, presented by the Honorary Treasurer, Mr. H. C. Beddoe, represented a balance in hand of £88 3s. 10d.

The report of the Assistant Secretary, Mr. James B. Pilley, represented the total number of Members on the books to be 246, including 10 elected during the past year. The attendance at the meetings came to a total of 143, a smaller attendance than usual, probably due to the unfavourable weather forecasts on each day of meeting.

The deaths during the past year included those of the Rev. Preb. W. Elliot, who held office as President during the years 1887 and 1888, Mr. B. St. John Attwood-Mathews, Capt. R. H. de Winton, the Rev. H. F. St. John, and Dr. Elliott Price.

The Rev. J. O. Bevan and Mr. J. Cockcroft, Curator, Free Library, were elected Honorary Members of the Club.

The Rev. Augustin Ley was elected on the Editorial Staff *vice* the late Rev. Preb. W. Elliot.

Five candidates were nominated for membership.

CONGRESS OF ARCHÆOLOGICAL SOCIETIES IN UNION WITH THE SOCIETY OF ANTIQUARIES.

It was announced that a Circular would be presented to each member of the Club, requesting their assistance in a "Scheme for Recording Ancient Defensive Earthworks and Fortified Enclosures."

FIELD NATURALISTS' QUARTERLY.

In reply to a Circular from the Scarborough Field Naturalists Society, per Mr. W. Gyngell, requesting the Woolhope Club to give their

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support to this Magazine, as dealing with all branches of biological study, and designed to promote communication between scattered Societies, the Honorary Secretary was requested to state that the Woolhope Club endorsed favourably the sentiments of the Scarborough Field Naturalists' Society as to the merits of the Field Naturalists' Quarterly, and had given it their support from its earliest appearance, and strongly recommended it to individual members.

Mr. Alfred Watkins presented "Additional Notes on Pigeon Houses since 1890" to be reserved for publication on an early date.

The places and dates of the Field Meetings for 1904 were fixed as follows:—

May 31st, Tuesday.—LYONSHALL.
June 28th, Tuesday.—CRASWALL PRIORY.
July 21st (Ladies' Day), Thursday.—TINTERN ABBEY.
August 25th, Thursday.—WYRE FOREST.

The general business of the Club concluded with the Address of the Retiring President, Mr. H. Southall.

ADDRESS OF THE RETIRING PRESIDENT,

MR. H. SOUTHALL, F.R. MET. SOC.

Fourteen years ago I had the honour of addressing you as Retiring President. The same duty, by your permission, devolves upon me to-day, and I have to thank you once more for the kindness and assistance received from you during my year of office. Although not a member at the commencement of the Club (it is now nearly forty years since I was admitted), I was, nearly from the first, associated with some of its earliest supporters, and have from that time taken a lively interest in its progressive work. It therefore affords me great satisfaction to know that the Club is now, after the lapse of more than half a century, in a very active vigorous state, that its work is by no means accomplished, and that the original idea of a Field Club for the study of Natural History and the association of those interested in such pursuits is steadily kept in view.

It is also satisfactory that our membership is well maintained, and (thanks to our indefatigable secretary, Mr. Moore), there is still ample supply of material in the shape of interesting papers and communications for our printed volumes of Transactions. I understand that there are some 278 pages already ready for press, or nearly enough for another volume. So far as I am able to judge, and I know this opinion is shared by many others, our records, whether we consider the printed matter, or the numerous illustrations, compare very favourably with those of any other Field Club with which we are acquainted, and this is true also as to variety of matter, its intrinsic interest, and its real

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value. Our contribution to the history of the county, too, is of no little importance. It is to be hoped that before long a more complete history than we now possess may be brought out.

I am glad to be able, at my expiration of office, to hand it over to a gentleman whose interest in various branches of natural history, and the valuable services he has already, with such conspicuous ability, rendered to the Club, point him out as eminently suitable to be our coming President. If I am not mistaken, he is the first entomologist and ornithologist combined who has held the office. And here I should like to allude to the great trouble he took last year in regard to proposed county legislation in connection with the Wild Birds' Protection Acts. I trust now, after considerable discussion in the County Council, and some difference of opinion as to what birds should be protected or not, that the matter may be placed on a more satisfactory basis than heretofore. Some birds, like the plover, for instance, seem able to take care of themselves, and not to be diminishing. But I feel sure that we should all wish that many of our rarer birds which are rapidly becoming extinct may be effectually preserved from senseless destruction, and that others such as goldfinches especially should not fall an easy prey to bird-catchers.

Our obituary list is this year somewhat longer than usual, at least eight of our number having been removed by death, and amongst them our oldest member, the Rev. W. H. Purchas, of Alstonfield, Derbyshire, who died at the age of 80 years in December, 1903. He was one of the three originators of the Club in the winter of 1851—52 In Mr. Blashill's Jubilee address two years since (see Volume *Transactions* 1900—1902, pages 288—299), particulars are given which I need not repeat.

Soon after coming to Ross in 1851 I made his acquaintance, as we both of us had then for at least fifteen years taken much interest in botany and the collection and drying of specimens of the county flora. I often accompanied him, frequently with the late Mr. Burton Watkins (also a very diligent collector), to the Doward Hills and other likely places, and I can testify to the extraordinary perseverance and energy he showed, as well as the great care he took in rightly naming what he collected, and his power of clearly discriminating points of difference which would have escaped the notice of any ordinary observer. In fact at that time he was by far the best authority in the county on botanical matters, and was recognised as such by such men as Professor Babington, with whom and the late Mr. Lingwood (the first President of the Club), he was on terms of the greatest intimacy.

It was about this time that he mapped out the county into fourteen districts with the view of combining and uniting the somewhat disconnected and fragmentary knowledge of the county Flora, which had not up to that time been attempted to be gathered together. In connection with this he corresponded with the different botanists he could hear of (and they were not many at that time), and collected a

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great deal of valuable information from some places, whilst in others scarcely any was obtainable. This was, however, interrupted by his leaving the county in 1855 for Durham University, where he studied with the view of taking Holy Orders, and it was not till 1866 that he prepared to publish in our *Transactions* his list of 868 indigenous wild plants gathered in the county of Hereford. This list was accompanied by a map of the county divided into fourteen districts, and with a written description giving the geological and geographic features of each. The list was printed in parallel columns, so that at a glance you could see in what district any plant had been found. It was so carefully compiled that, although numerous additions have been, and are still being, made to the original list of the Herefordshire Flora, very few inaccuracies occur to require correction.

It was not, however, till 1889 that the work entitled "A Flora of Herefordshire" was published under the combined editorship of Mr. Purchas and the Rev. Augustin Ley. And there can be no doubt as to the value of this important work, which is so well known to most of you.

Beyond this, Mr. Purchas contributed but little to our printed *Transactions*. His extreme care in publishing anything he was not sure of, added to what has been entitled "his excessive distrust of himself," whilst it doubtless added to the reliability of any statements he made, may account for his not having written more frequently. Mr. Ley has already sent an account to "The Journal of Botany," which has been printed in pamphlet form, describing more fully his life and character, etc., and as I understand he intends to send this for publication in our *Transactions*, I will leave out much I could say of him, not only as a scientist, but as to his fidelity to duty, and his high Christian character. I think we shall all feel that by his death we are losing not only our oldest member, but also one of the most valuable in our long list of workers and contributors. He was made an honorary member before he left this county.

I should like to allude also to the Rev. Prebendary Elliot, formerly Secretary of the Caradoc Field Club. He was elected a member in 1884, and he was our President for the years 1887 and 1888 He contributed a paper on an Ancient Well at Brinsop in 1887; also in the same year, one on the Geology of the Old Red Sandstone, and one on Plaish Hall, an old manorial residence (circa Henry VIII.) in Shropshire, near Church Stretton. Since 1889, Mr. Elliot was an active and valuable member of the Editorial Committee.

The late Captain R H. de Winton, who was elected member in 1886, took great interest in the field meetings, which he generally attended when able.

The Rev. H. F. St. John read a paper on "The Preceptory ot Dinmore," "which was founded in the latter half of the 12th century,

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and which belonged to the great Military Order of St. John in Jerusalem, and for many centuries played no unimportant part in the world's history"

Dr. Elliott Price, who was elected a member in 1896, was a great favourite among a considerable circle of friends, and succumbed at an early age to a severe attack of pneumonia.

General Alexander Hutchinson, F.R.G.S., F.G.S., only joined the Club in 1901, on his removal to Wythall, near Ross. He had long taken a great interest in scientific pursuits, and seemed likely to become a valuable member. He, too, succumbed to a rather sudden seizure. He will be well remembered by those who visited his fine old timbered residence (temp. circa Henry VIII.) and enjoyed his courteous hospitality. The good photographs on pages 200, 201, of our last *Transactions* * will bring it clearly to mind.

We have also lost by death two valuable members in Mr. B. St. John Attwood-Mathews and Mr. J. P. Brown.

Our first Field Meeting was on Thursday, May 28th, 1903, when we visited Shucknall Hill, Westhide, Yarkhill, and Tarrington. This was a district which I had not previously visited, and was specially interesting from a geological, botanical, and antiquarian point of view. On arrival at Withington Station a large conglomerate stone attracted our attention. Mr. Clarke's opinion was that it had been an old Churchyard Cross turned upside down. On one side of it there is an inscription, "This is the way to Hereford, T.D. 1700," and on another side, "This is the way to Worcester and Ledbury."

Traversing the *old* Worcester Road for about 1½ miles we came to a large water fountain on the side of the road. Here we met, and had the help and guidance of, the Rev. Preb. Lambert.

As full accounts of the outing will be published, I need not enter into details of the day's work; suffice it to say that the Geologists occupied themselves some time at the Shucknall Quarries, and the Botanists found several interesting species on the rocky banks. The view from the top of the hill (563 feet) was very fine, and would have been even more so if the air had been clear.

At Westhide Court, the residence of Mr. W. Jenkins, we were hospitably entertained, and the remains of a large moat pointed out.

We next visited Yarkhill Church, and were received by the Vicar, who kindly showed us the principal features of the building and explained its history and some of its restorations, and kindly offered us refreshments. The Registers are in fair condition, and embrace a period of 225 years, recording a visit of The Plague, in July, 1644. This is seven years later than that of Ross, in 1637, showing that it was lingering about. This was probably its last appearance in this county.

* The photographs of the front of Wythall Court were taken by the late Rev. H. F. St. John, and not (as by error stated) by General Hutchinson.

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We next reached Tarrington, and dining at the Foley Arms, had time to reach Tarrington Church. We were also allowed to see Dr. Wood's magnificent collection of Lepidoptera and Diptera, which of itself would have amply repaid us for our day's outing. We had only just time to reach the railway station for Stoke Edith when an extremely heavy thunderstorm burst over us. Those who had to cycle got thoroughly drenched before reaching home.

Our second Field Meeting was at Crickhowell, on June 11th. Again the weather was unpropitious, the clouds hanging quite low down completely obscured the hills, and thus prevented us from enjoying the fine scenery between Abergavenny and our destination. But although we had frequent light showers, we had a most enjoyable day.

The Botanists, led by Mr. Ley, went to the site of *Pyrus minima*, a handsome shrub allied to the apple and pear family or tribe. This is, I believe, the only locality known for it anywhere, and it must therefore be reckoned as one of greatest known rarities. The party returned later in triumph bringing with them branches in full blossom, which they were kind enough to distribute amongst us. In addition to this they reported the finding of other uncommon plants.

At Tretower we visited the ruins of the old Castle, and were shown an inscribed stone "Valens" which now forms one of the gate pillars at the entrance to the Vicarage house. Another old stone ("Peregrine") is built into the wall of a neighbouring residence. At Glanusk Park (the seat of Lord Glanusk) we found the famous "Ogham Stone," known as the "Turpilian" stone. All these much interested our antiquarians, and showed clearly that we were on the site of a considerable and important Roman station.

Of the Ladies' Day at Church Stretton I can say nothing from my own knowledge, as I was not able to be present. I am told that the pouring rain which came on after mid-day spoilt the outing; and that there was a very brief view of the glorious panorama from the summit of Long Mynd, which was just reached before the weather changed for the worse.

Our fourth Field Meeting was at Caerwent. This Romano-British city was seen under most favourable circumstances. Recent excavations and discoveries have done much to open it up to view, and under the very competent guidance of those who were in charge of the works, we had a really good explanation of what has been recently done.

A very interesting paper was prepared by Mr. James G. Wood, M.A., F.G.S., on the place names of Caerwent. We were also favoured, amongst other papers by the same author, with a pamphlet on "Points of interest" in the route from Grange Court to Caerwent, which we had just travelled over. I feel it would be superfluous for me to attempt to describe more fully what will be so much more completely set out in the papers to be published in our *Transactions*.

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We want especially young recruits in the different branches of research, whether of natural history or pure science. Depend upon it, neither geology, astronomy, or physiology have as yet yielded up all their secrets. There is much which happens around us still to be explained—much to be discovered and explored.

In looking over our *Transactions*, I am struck with the variety of the work we have already undertaken. At first probably Geology and Botany were most considered. Then the remarkable Trees were visited, measured, and many of them photographed. Fungology at one time was the engrossing subject. The "Fungus Forays" were notable gatherings of mycologists from all parts of the country. Our Orchards and the different varieties of Apples grown in the county next engaged our attention, and led to the valuable work "The Pomona" being brought out. The Roman and British Camps throughout the county were then with few exceptions visited and described. Afterwards, much attention was given to our old parish Churches, many of which have great historical interest, and in some cases we had the opportunity of examining the old registers. In this direction I think more might usefully be done.

Ancient Monuments and Inscribed Stones have more lately excited considerable interest, and it is very desirable that these should be carefully preserved. During the last few years Offa's Dyke has received much attention, with the view of tracking it where it was not previously satisfactorily traced. A good deal of fresh light has been thrown upon it, but more close investigation is required before its course from Dee to Wye can be clearly pointed out.

The Museum has not received many additions during the last year except the fine specimen of the Bittern, which was kindly sent to us after having been accidentally shot. Would that we could better preserve such rare and beautiful visitants.

The Museum has also received a contribution to its Metals from the hands of Mr. Sparrow, of Ross.

Notwithstanding the great interest attaching to Antiquarian and Historical researches, and the discovery from time to time of interesting relics of the past, I should be sorry if the study of Natural History in its different branches should be at all neglected in the future. Speaking from my own small experience, I can testify to the unfailing interest connected with such a pursuit. It is one which increases rather than diminishes with advancing years, adding frequently a fresh interest to life when perhaps old employments have to be abandoned, many old friends have left us, and when some fresh hobby or occupation, from its incitement to the exercise of both mind and body, may relieve the tedium and monotony often felt when the active duties of business or life, are laid aside. Hence the advantage of commencing early to take interest in some special field of inquiry, even if there may seem to be but scant opportunities for exploring, or studying, as we should like to

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have presented to us—since a taste once acquired and formed does not easily pass away, and may be developed later when more favourable opportunities may present for their further prosecution. All I can say is, and this shall be my last word, as I shall not be likely to inflict another Address upon you, I venture to hope that our members in the future may even be more enthusiastic and keen, as well as more thorough, and painstaking, in their delving after truth and knowledge, than we have been in the past, that so the future of this Club, to which we are many of us so much attached, may be even higher and more distinguished than the past has been.

NOTE ON THE LANDSLIP IN THE WOOLHOPE DISTRICT, NEAR PUTLEY COCKSHOOT, ON FEBRUARY 17TH, 1904.

By H. Cecil Moore.

In February, a landslip occurred on the farm of Mr. Charles Hodges, of Hoarhouse Farm, at a place about two hundred yards below, and east of, the Putley Cockshoot, which is situated on the Claston ridge of the pear-shaped elevation which surrounds the Woolhope Valley.

The short piece of main road at this Cockshoot* lies at an elevation from 599 to 615 feet. The highest elevation in this neighbourhood, given in the Ordnance Map, Herefordshire, xxxiv. S.E., is 892 feet, a trigonometrical station on Sheepcote Hill, a part of Seager Hill, a mile north-west of the Cockshoot.

The lower sloping ground immediately east and south-east of the Cockshoot is billowy, or as we should call it in Herefordshire, "tumpy"—the evident traces of the so-called "Wonder" landslips of 17th February, 13th year of Queen Elizabeth, 1571.† The site of Kynaston Church or Chapel, which was overthrown in that catastrophe, is given in the fore-mentioned Map as half a mile south-east of the Cockshoot. For some of the quaint descriptions of the Wonder Landslip, see *Transactions*, 1878, p. 75, and 1899, p. 105.

The less wonderful landslip of 1904 occurred on the general elevation of about 500 to 550 feet. The total extent of the resultant three most prominent gaping fissures in the disturbed surface, amounted to 150 yards or more, from the northerly to the southerly direction. The total area of earth subsidence covered about two acres.

* There are other localities called "Cockshoot" in this neighbourhood. One two miles north-west, on Map XXXIV. S.E., on the elevation 630·5, half a mile south of Stoke Edith Mansion. On the same Map will be found Cockshoot Wood, on the east of Ethelbert's Camp, one mile south-west of the above-mentioned. Again on the Map., XL. N.E., three-quarters of a mile still further in the south-west, is the Cockshoot on the south-western slope of Backbury Hill, between St. Ethelbert's Camp and Old Sufton, half a mile west of the supposed portions of Offa's Dyke, which, in the present time, bears the name of "Clouds."

† Owing to some error, probably in transcribing, a discrepancy has occurred as to the date of the year. In the Ordnance Map and elsewhere the date 1575 occurs. I adhere to the date 1571, or xiii. Queen Elizabeth.

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LANDSLIP IN THE WOOLHOPE DISTRICT, NEAR PUTLEY COCKSHOOT, ON FEBRUARY 17TH, 1904.

No. 16. To face page 228. *Photo. by A. Watkins*

For the Landslip in 1844, from Dadnor's Hill, near Stoke Edith, see "Transactions," 1899, page 106.

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No rock was bared in any of the openings. The exposure of Silurian soil in the clefts is of yellow ochre colour. The detatched lower masses of the landslip, in their movement downwards and forwards, were folded over in a billowy formation, and at the base of the hill in some instances the turf and surface soil were originally overhanging. In some places the Old Red Sandstone, turf, and surface soil on the lower elevations, forced upwards and backwards by the weight of the falling mass, has been slightly overturned, exposing to view a strikingly prominent line of demarcation, due to the contrast between the yellow and the red colours of each separate geological formation, thus brought together in direct apposition.

Of the above-mentioned fissures in the earth, the lower southern-most opening is sufficiently large and deep to half bury out of view a huge oak tree, of a girth denoting the growth of about 200 years.

Warning of the impending landslip was given to Mr. Hodges, of Hoar House Farm, a few hundred yards distant, by the remarkable inclination, on the previous day, of the oak tree.

The accompanying photograph was taken by Mr. Alfred Watkins.

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Woolhope Naturalists' Field Club.

FIRST FIELD MEETING, TUESDAY, MAY 31ST, 1904.

LYONSHALL, FOR OFFA'S DYKE; ALMELEY AND EARDISLEY.

The alignment of about 100 yards of Offa's Dyke, visible from the western end of the long northern platform at Titley Railway Station, and to be seen more distinctly on the right hand side on the journey to Kington, opposite the third telegraph-wire pole, 260 yards westwards of the station, is too well known to our Members to require repetition or revisiting. Mr. Moore reports distinct traces of its continuation southwards in Lyonshall Park Wood, on the opposite side of the railway line, but only for a short distance, where, apparently, its course would have been along the hedge, or eastern boundary fence, of Lyonshall Park Wood, above the contour of 560 feet above sea level. Mr. Moore has spent many days in the explorations of this district and can find no other evidence between this spot and the recognised portion, one mile further south, crossing the drive to Lynhales, beyond a suspicious cutting in the wood traceable for about a hundred yards, which may, however, be a more modern boundary fence. The position of this doubtful trace is three hundred yards south of Bullocks' Mill, and from its course can be seen, upon the opposite slope, the "Old Tramway" leading to Old Radnor.* See Ordnance Map, Herefordshire, Sheet XVII., N.E.

The *indicia* of Offa's Dyke calling for examination on Tuesday, May 31st, 1904, lay in the more southerly parts of the parish of Lyonshall. With this object in view the route most convenient was to Lyonshall from Eardisley Junction, on the Midland Railway.

From Lyonshall Station an uphill walk of about 600 yards brought our party to the northern entrance of the Outer Bailey of Lyonshall Castle, from which the approach over the surrounding moat conducted to the Inner Bailey, within which stood the ivy-mantled ruins of the circular Keep, still exhibiting in its massive walls some traces of deeply-splayed embrasures.

Lyonshall Castle is situated on a commanding eminence, 600 feet above sea level. Its condition for a long period has been what would be called, in Leland's language, "defloured."

* Vestiges of the Old Tramway can be seen in many places, sometimes on the right, sometimes on the left of the present line of railway by Eardisley, Hay, and Talgarth to Brecon. The Act for Extension of the Hay Railway (so called, *i.e.*, from Brecon to Eardisley) to the Lime Works of Burlinjobb, Old Radnor, was obtained in 1818, and the line opened 1st May, 1820. See Parry's History of Kington, pp. 43—45.

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LYONSHALL CHURCH.

No. 17. To face page 231. *Photo. by T. H. Winterbourn.*

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According to Robinson, in his "Castles of Herefordshire," it ceased to be occupied as a residence after the beginning of the 15th century.

"In ancient days of high renown,
Not always did these castles frown
With ivy-crested brow;
Nor were their walls with moss embrowned,
Nor hung the lanky weeds around,
That fringe their ruins now."

Of the neighouring border Castles of Eardisley and Almeley the only vestiges are earthworks and moats.

Under the name of Lenehalle it formed, at the time of the Domesday Survey, part of the possessions of Roger de Lacy, and had belonged to Harold in the reign of the Confessor.

The following extracts are from Robinson's "Castles of Herefordshire," to which reference should be made for details of its history and its possessors :—

"At an early period, in all probability during the 11th century, it was occupied under the families of Lacy by a branch of the family of d'Ebroicis or Devereux, the descendants of which became in after time its chief lords . . . . . A daughter of Sir John Devereux married Walter, 5th Baron Fitz Walter, who in 1403 had orders from the King (Henry IV.) to fortify his Castle of 'Lynhales' against the Welsh insurgents under Owen Glendower." (Rymer, VIII., 328).

Lyonshall Church, contiguous to the Castle, with its neatly-kept Churchyard abounding in fine and handsome trees, occupies a picturesque situation. Mr. Kempson drew attention to the fine old font being in its proper position, namely, in the centre of the Church, to the door of the south side opening, as it should do, to the left hand, and to the stoup on the east side of it. Other points are : a late Norman arch over another arch, at the west end with a slight point to it—as is found in Leominster Church and others of the later Norman work. Travertine stone covers a small Norman window in the west end of the north aisle. On the south side of the chancel there is an Early 13th Century Lancet window. The two lights above the chancel arch probably lighted a rood loft belonging to the older Church. The Tower of the Church would, as a watch tower of observation, contribute to the defensive objects of the neighbouring Castle.

The Church is dedicated to St. Michael and All Angels. Extensive restorations were carried out in 1870 to 1873; architects, Messrs. Bodley and Garner, Harley Street, London; builder, Mr. Holland, of Almeley. The upper part of the Tower was rebuilt, three large new windows inserted, and the structure raised 14 feet. Owing to cracks in the South Clerestory wall, the whole Arcade was rebuilt. The burial ground was also extended. The Restoration Festival took place on August 2nd, 1873.

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Leaving Lyonshall Church, the party proceeded about five hundred yards along the road to Kington, as far as Crackydonia,* close to the second milestone from Kington, where they entered a field on the left, in order to trace in a south-easterly direction the course of Offa's Dyke. The traces of sometimes a ditch, at other times an embankment, are visible more or less for the distance of one mile. Commencing (Herefordshire, Sheet XVII., N.E.) on the elevation of a little over 600 feet as a ditch, all traces for a short distance are effaced by the modern requirements of the drive to Mr. S. Robinson's residence, Lynhales, which crosses the course; it is again prominent down the slope as an embankment. On reaching the bottom of the valley on the elevation of 500 feet, it is crossed by the Kington and Eardisley branch railway (Herefordshire, Sheet XVII., S.E.), half a mile south of Lyonshall railway station. It ascends the opposite slope for nearly half a mile to the high ground, 600 feet (Sheet XVIII., S.W.), to be again lost in the maze of rural cottages at Holme Marsh, or, as it is locally called, Holme's Marsh.

Our party now mustered in a field off the main road, commanding an extensive view of the intervening lower ground between this spot and the termination of Offa's Dyke under Lady Lift Hill. Here a long conference was held on the subject of the possible and probable course of the $4\frac{3}{4}$ miles missing link of the Dyke, over the country represented on the Ordnance Maps, Herefordshire, Sheets XVIII. S.W., XXV. N.W., and XXV. N.E., and contributions were solicited from members towards the elucidation of the matter in question, its further consideration being postponed until after the reading of Mr. Alfred Watkins' paper "The Gap in the Weobley District."

From Holme Marsh, a walk of a mile and three-quarters along the main road brought the party to Almeley Wootton, and to the "Summer House" of the Misses Southall, of Leominster, a picturesque four-gabled black and white house, which has an interesting history of family tenure direct from Roger Prichard, who built it 235 years ago. A photograph was taken by Mr. Winterbourn. Contiguous to Summer House is the *old* Friends' Meeting House, so called because of the existence of another more modern Meeting House in the neighbourhood. A photograph of the exterior was taken by Mr. Watkins. The *old* Friends' Meeting House dates from 1672. About three-quarters of the interior of the rectangular building was occupied by a heavy-looking gallery. Within the building, Mr. H. Southall read some extracts from a book dated 1794, in the possession of Mr. James W. Lloyd, entitled "An account of the Convincement, Exercises, Services, and Travels of that ancient servant of the Lord, Richard Davies, with some relation of Ancient Friends, and of some of the Spreading of Faith in North Wales."

* Crackydonia; a corruption of the Welsh Crûg-y-dwyn, "the mound on the eminence."—J. G. W.

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EMBANKMENT—OFFA'S DYKE. BETWEEN HOLME MARSH AND LYONSHALL.

No. 18. To face page 232. *Photo. by T. H. Winterbourn.*

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FRIENDS' MEETING HOUSE, DATED 1672, AT ALMELEY WOOTTON.

No. 19. To face No. 20, between pages 232 and 233. *Photo. by A. Watkins.*

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SUMMER HOUSE, ALMELEY WOOTTON. BACK VIEW.

No. 20. To face No. 19, between pages 232 and 233.

Photo. by T. H. Winterbourn.

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THE "TWT," OR "THE BATCH TWT," AT ALMELEY.

No. 21. To face No. 22, between pages 232 and 233. *Photo. by A. Watkins.*

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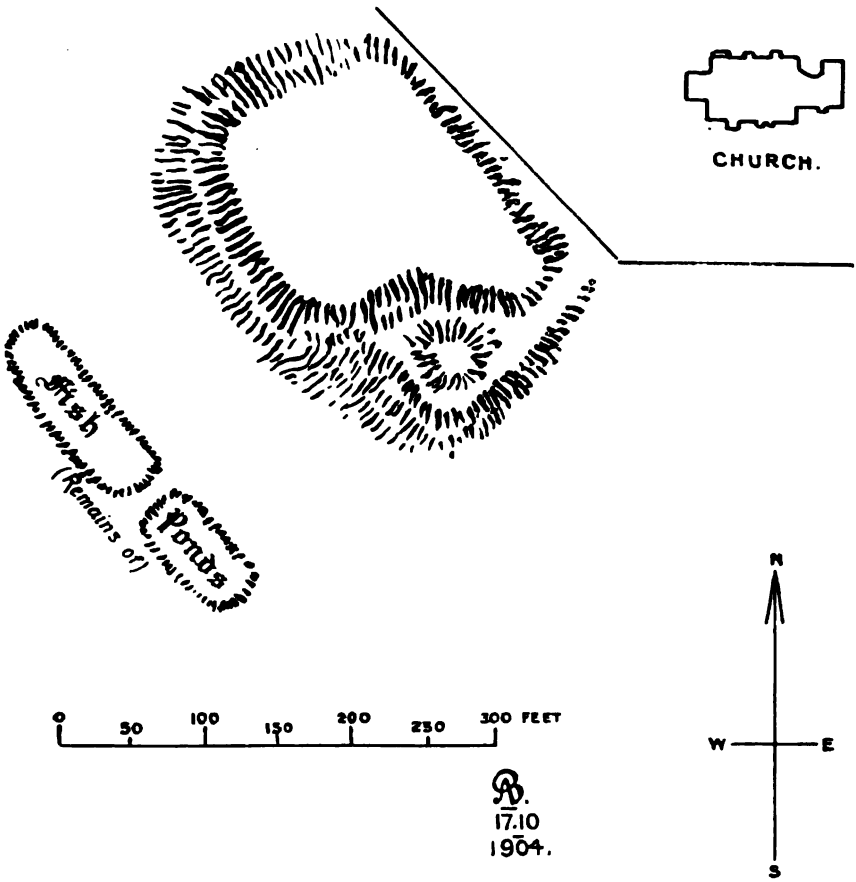

PLAN OF THE SITE OF ALMELEY CASTLE (ALMELEY'S TWT).

No. 22. To face No. 21, between pages 232 and 233. *Drawn by Colonel A. G. Burn.*

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Richard Davies and his friend John ap John, about the year 1669, visited their friends and brethren in South Wales. In the book a reference was made to Roger Prichard, with whom, when they were in the lower end of Radnorshire, they appointed a meeting at his house in Almeley Wootton, in Herefordshire.

Upon another occasion, on their returning from Pembrokeshire, they again visited Roger Prichard, and affirm that "many were gathered to the Lord in those parts." As for Roger Prichard, "the Lord blessed him in his basket and his store, and his heart and house were open to friends, and he built a fine Meeting-house at his own charge, and also gave a burying-place, and settled both upon friends for that service, and lived and died in love and favour with God, and in amity with his brethren."

At the back of the Summer House our party entered a narrow dingle called "The Batch," which extends for three-quarters of a mile, bounded upon its west by the railway line, and terminates close to Almeley Station. An elevated mound, locally called "The Batch Twt," in contradistinction to another mound near the Church which is called "Almeley's Twt," occupies a position in the Dingle. A brooklet flows at its base, and there are remnants of small contiguous defensive earthworks. A photograph of The Twt was taken by Mr. Watkins.

Mr. James G. Wood, F.S.A., contributed the following remarks upon The "Batch" and The "Twt."

THE "BATCH" AT ALMELEY.

This is the Middle-English "bæch"—a valley. It occurs in Somersetshire in the same form, as in the Englishbatch near Bath. The form "bach" or "bache" frequently occurred about 1300, in the Dean Forest, and still survives in Eastbach, near Lydbrook.

THE "TWT" AT ALMELEY.

This is a Saxon, not a Welsh, word, and should be written "Toot," in which form it often occurs. It means "a watch place," from totian—to peep out. In one form or another it is to be found in all, or most, counties of England; as tut, tot, tout, tut, dod, dead. In fact, "Deadman's Lane," which is often found, with some imaginary horror annexed to it, is nothing but the Watchman's Lane. On Tutshill, near Chepstow, was a "tout" (on which William Marshall afterwards built a watching tower), to which the Deadman's Lane led up from the river. So at Plymouth from Deadman's Bay, in the Cattewater, Tothill Lane leads up to the spot which overlooks the Sound. So Dodman's Point in Cornwall, equally called locally Deadman's, and Deadman's Hill, overlooking the German Ocean at Sheringham. Totmanslow (totmans-hlæw, the watcher's hill), Tutbury, Tetenhall, (totynghylle), Castle Toot (near Cleobury), Tothill Fields by the old

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Westminster Ferry, Totness guarding the Dart, are only a few out of a long list, to which, over the border, may be added the Dod Fort at Moffatt on a 700 feet summit. The word exactly corresponds to the "gwylfa" so frequent on the Welsh hills, where a tumulus or other artificial mound afforded facilities for watching.

Of such "speculæ" fine instances remain at Caerleon, Bedford, Bishop's Stortford, and Canterbury. G. T. Clark, in his Mediæval Military Architecture, has shown how frequently such earthworks became the site of keeps or towers.

But those who believe in far-fetched and fanciful etymologies may like to know that Mr. Ormerod thought that on Tutshill he had the site of an altar of "Teutates"; Hone fancied that in Lincolnshire the Celtic Taute (Mercury) had been around and planted "Toothills"; while Mr. G. T. Clark (with whom philosophy was not a strong point) imagined he had discovered "Thoth" in Tutbury.

In addition to "Almeley's Twt" and "Batch Twt," in the parish of Almeley, we find in Ordnance Map, Herefordshire, Sheet XVII. S.W., two miles south-west of Kington, a mound marked "Castle Twts."

The fact that from the summit of "The Twt" is seen, on the opposite side of the railway line, a building called Oldcastle, reminds us that we are in the parish of the Martyr Lollard, Lord Cobham (Sir John Oldcastle). Reference to *Transactions* 1897, pp. 258, 260, 261, shows us that at the south-eastern base of Hatteral Hill (Black Mountains), is a parish called Oldcastle, in Monmouthshire, half a mile south of the Herefordshire boundary (Herefordshire, Sheet XLVIII. N.E., Monmouthshire Sheet III.), and that current local traditions connect the escape of Sir John Oldcastle from Olchon Court in Herefordshire, a few miles northwards. On page 261 we find a third Oldcastle on the western border of Deerfold Forest, between Lingen and the ruined priory or nunnery of Limebrook. We have read of "The Lollards in Herefordshire," and their connection with the Forest of Deerfold (see *Transactions*, 1869, p. 168), and it is possible that Sir John Oldcastle may have found a temporary refuge amongst his friends during his four years of wanderings from 1413 to 1417, until his seizure at "Cae'r Barwn" *(Barone's field) by Sir Gruffydd Fychan and his brother Jenan ap Gruffydd, and his being handed over to Lord Powis, by whom he was sent to London in charge of his son-in-law, Sir John Grey. We have also read how

> Seven Grecian cities vied for Homer dead,
> Through which the living Homer begged his bread.

* According to Rev. John Davies, of Pandy, in his address at the 31st annual meeting of the Cambrian Archæological Association at Abergavenny, in August, 1876, Cae'r is abbreviated from "Cae yr," "field of," whilst "Caer" is "camp." From not noting this distinction absurd conjectures and errors have often occurred.—J. G. W.

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THE COURT HOUSE, ALMELEY, WITH NORMAN BILLET-MOUND OVER THE OPEN ARCH DOORWAY.

No. 23. To face page 235. *Photo. by A. Watkins.*

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Facts are strongly conclusive that Oldcastle, in the parish of Almeley, is the place of his birth.

In the writ *De Inquirendo* (Patent Rolls of Henry VI.), in which the attainder of Sir John's possessions is given, we find Oldcastle in the parish of Almeley, among other places, mentioned in the following terms:—*Quæ quidem loca vocata Oldcastell et Wotton sunt et tempore captionis inquisitionis predictæ fuerunt hameletti de Almeley.*" Further remarks of this Lollard martyr are given in the Rev. R. H. Warner's paper below.

On the left hand side of the road leading from The Batch to Almeley Church, the attention of the party was attracted to an open-arch doorway supported by a Norman billet-mould, at the entrance to the Court House. A photograph was taken by Mr. Alfred Watkins.

On arrival at Almeley Churchyard, the site of the ancient Mound and defensive earthworks in the adjoining field were viewed, with the remains of the Fish-ponds on the lower ground beyond. A plan of the same was presented, drawn by Colonel A. G. Burn, of Almeley House.

Almeley Church was inspected. Mr. Kempson drew attention to the enormous thickness of the walls of the square tower, here again, as in the border Castle of Lyonshall, probably made for defensive purposes, and probably attached to an earlier church. The church is of 14th century mainly, but 13th century work is seen in the vestry attached to the north side of the chancel. Here the Vicar read a paper, of which the following is the substance:—

ALMELEY CASTLE AND CHURCH.

By Rev. R. Hyett Warner.

I have not found any trace of Almeley in Anglo-Saxon times, except as one of the manors belonging to St. Guthlac's Priory, Hereford, nor any mention of a castle or "defensible house" in the entry relating to the place in Doomsday. It was one of a series of forts stretching south and north along the Welsh Marches, as they were called, which were rendered necessary by the hostilities which so long prevailed between the Welsh and English. Whether it was built by the De Lacy family, who held Almeley under the Priory of St. Guthlac, Hereford, as one of the defences of their Herefordshire estates, or whether, like Painscastle and other castles, it owes its origin to the unsettled state of the country in King Stephen's time, there is no direct evidence to show. But Almeley appears as a castle or "castellum" in the Patent Rolls of the reigns of King John and Henry III.

In the year 1216 King John issued his mandate to William Cantilupe, constable of Almeley Castle, to give up possession of the

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Castle to persons named in the order, to enable Walter Beauchamp, the owner, to proceed to Gualo, the Papal Nuncio, to obtain absolution from the interdict, and then to come and make his peace with his king. His son, Henry III., on September 22nd, 1231, visited Almeley on his way from Wales to Hereford, and there received the homage of Simon de Montfort, Earl of Leicester, for his father's lands.

Thus our remote village appears on the page of history in connection with events that deeply stirred the hearts of our forefathers, and with a man whose name stands in the forefront of the parliaments of the world.

As a member of the Honour of Weobley, one of the De Lacy estates, Almeley was connected successively with the De Verdon, Burghersh, and Despenser families, who, through marriage, succeeded in turn to the Honour.

In the Scutage Returns for 1242, which give an account of the knights' fees liable to payment in lieu of personal military service, Roger Pychard is returned as holding in Almeley "four hides for the fee of one knight, of old feoffment, of the heirship of Walter de Laci of the Honour of Weobley." This would mean that the Pychards were owners of land in Almeley, subject to the manorial rights of the Honour of Weobley. The memoirs of this family were published a few years ago, and contain much interesting information respecting Almeley, Ocle Pychard, and other parishes in which they had property.

But by far the most interesting historical character connected with Almeley is Sir John Oldcastle, the martyr. His family originally belonged to Wales, and were evidently settled in Herefordshire by the early part of the fourteenth century. The name may have been assumed from what was believed to be the site of a Roman encampment or "castellum" in Almeley, or from some other property in which the family were interested. Any doubt as to whether Sir John Oldcastle was connected with Almeley is dispelled by the record of the Inquisition held after his death on the application of his son Henry to recover his father's lands. In this record we find the names of fields and meadows agreeing with the Tithe Apportionment and with Title Deeds in possession of the present owners of the Newport Estate. The story of Sir John's eventful life, his many romantic adventures at home, his tournament in France, his earnest efforts to stem the corruption of the Church, and to spread a purer form of the Christian faith; the place that he holds in the history of English religion, politics and literature; and not least his shameful betrayal and cruel death, when he was burnt alive on Christmas Day, 1417, are matters known to us all, and may well excite our wonder at the notions of religion held by our fierce forefathers of "the good old times," and make us glad that our unknown parish on the Welsh Marches formerly owned for its lord a better hero than Shakespeare once put on the stage in his name, and a truer Christian than many canonised at Rome.

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In the early editions of Shakespeare's Henry the Fourth Sir John Oldcastle plays the part assigned in later editions to Sir John Falstaff, "the wine-god of England" as one critic calls the fat knight of the play. Influenced, no doubt, by a truer appreciation of the martyr's character, and by the natural protests of his descendants, the poet corrected the error into which he had fallen, and makes the speaker of the epilogue say, "Oldcastle died a martyr, and this is not the man."

Sir John Oldcastle is sometimes spoken of as a traitor to his sovereign. The evidence is the other way, but the man who had witnessed the shame of Richard the Second, and had seen Sawtry in the flames, and the poor shoemaker of Evesham in his tar barrel, might be forgiven if he did not feel strongly the ties of allegiance towards a dynasty which held the sceptre by usurpation, and maintained its throne by the blood of martyrs. At all events, his beautiful Latin letter to King Wenceslaus breathes the spirit neither of a fanatic nor traitor, but of a true Christian gentleman and a brave knight. (Wylie's Henry the Fourth).

Sir John Oldcastle is still represented. His daughter, Catherine, married Clitherow, Admiral of the Fleet East of the Thames, and the Stracey-Clitherow family, in their motto, "Loyal but free," faithfully reflect the character of the great Lollard chief.

We have no record when Almeley Castle ceased to be used for military purposes, when the last blast of the horn was heard at its gates, and the last bugle sounded within its courts. But being no longer required for war, and being unsuited for a home in times of peace, it vanished, like many others, as a dream, which, in spite of all that was picturesque and romantic, we need not wish to recall.

In the year 1863 the Cambrian Archæological Association paid a visit to Almeley, and carefully examined the reputed site of the castle. These gentlemen left on record in their *Transactions* their opinion that the mound adjacent to the church was the site of the "keep" of the old castle, the rectangular defences of which they said could easily be discerned. With the help of the "plan" of the site prepared by Colonel Burn for this meeting, any one may satisfy himself of the accuracy of this opinion of that learned society. The position of the moat, which must have been supplied with water from the same source that supplied the "Mill," which existed close by in former times, can also be recognised, and with the help of a little imagination the Almeley of Plantagenet days can be called up from the past with its quaint old world life and ways.

THE CHURCH.

A few words respecting our Church. As in the case of the castle, there is no mention of a Church at Almeley in the Doomsday Record; which fact, however, does not exclude the possibility of the existence of a church, probably of a very humble character, in connection with the Priory of St. Guthlac, to which the Manor belonged.

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In the presence of skilled architects, who are with us to-day, I shall not presume to trace the architectural history, or to dwell upon the architectural features of our beautiful Church. It does not, however, require professional knowledge to perceive that the nave and tower are not of the same date. The Tower, with its walls of abnormal thickness, which suggests the idea of military defence rather than the peaceful associations of Christian worship, is probably of the Anglo-Norman period. The upper part with its battlements is apparently of later masonry than the lower part. The Cambrian Association, to whose visit to Almeley in 1863 I have already referred, pronounced Almeley to be "an excellent specimen of a fourteenth century church." In the year 1381 the advowson of the church was made over to the Austin Canons of Wormesley, a date probably not far removed from that of the erection of the nave. From that time the living ceased to be a rectory, and I have the honour of addressing you as one of a series of vicars commencing with a learned Friar! You will observe that a portion of the panelled ceiling belonging to the Tudor period still remains, the rest having perished from decay. Attention has recently been drawn to travertine stones occurring here and there in the masonry of the walls, the material, as many will remember, of which Moccas Church is built, and which may be seen in process of formation in the vicinity of that interesting fabric. The Cambrian Association speak in their Transactions of the Carnarvon arch to be seen over the entrance to the old vestry, and in the window on the south side of the chancel, but the canopied arch with the opening into the vestry is not explained.

Almeley Church cannot boast of any monuments to the mighty dead. A few mural tablets to the Foley family, who formerly owned the Newport estate, and a few entries in the parish register relating to the Wrottesley, Baskerville, Pember, and Foley families are almost the only surviving links to connect the Almeley of to-day with the forgotten worthies of the past.

In Dingley's "History in Marble" there is a sketch of Almeley Church as it appeared in the latter part of the seventeenth century, and also of Newport House, which at the time belonged to Mr. Francis Pember, of All Souls' College, Oxford.

In the year 1865 my predecessor in this parish, the late Rev. W. A. P. Campbell, undertook the restoration of the church. The work, which was carried out at the cost of £1,000, included the removal of the old oak seats and west gallery, substantial new oak seats throughout the building, a fine east window representing various saints, including St. Thomas de Cantilupe, of Hereford, together with the new window in the south side of the chancel, and other work. It will be observed that at some time or other the pitch of the chancel roof has been lowered, but I can find no record of the alteration.

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I may conclude these few brief notes by referring to the restoration of our Tower, which was accomplished in November last year. The condition of the upper part of the Tower had been reported as dangerous owing to the stone having perished, and it was decided to renew the battlements and underlying masonry down to the first string-course, to restore to their original design the four belfry windows, and to re-point the whole tower. This has been done at a cost of £391, exclusive of professional charges, and the cost of a new heating apparatus in place of the old one, worn out. The improvement in the appearance of our ancient church, and the increased comfort of those who worship therein, are a matter of sincere thankfulness to all of us in Almeley, and to the many friends in other parishes who have helped us in our hour of need.

In view of the unknown future and of the possible changes it may bring in the constitution and working of our Church, we may confidently hope and devoutly pray that a fabric like this, which has already witnessed so many changes, and in which so many generations have worshipped, may continue to be a witness to generations yet unborn for God and His Christ, and for that pure and lofty ideal of humanity held out to us in the Gospel, without which life on earth is poor indeed.

After the reading of the paper, the opinion was offered by Mr. Kempson, F.R.I.BA., that the vestry on the north side of the church was originally a chantry with priest's chamber above, and that it was incorporated in the fourteenth century church and chancel, and so connected with the more ancient tower. The arched opening now seen would give access to the priest to the view of the Mass in the church..

After tea and refreshments at Almeley Vicarage, a walk of two miles brought the party to the New Inn, Eardisley, where, after dinner, a paper was read by Mr. Alfred Watkins, under the title of "Offa's Dyke, and the Gap in the Weobley District," which led to further discussion.

The President, Mr. T. Hutchinson, introduced the suggestion for further consideration of collecting "Epitaphs in Churches and Churchyards of Herefordshire."

Time did not permit the reading of a paper on "The Occurrence of the Mistletoe in Herefordshire upon the Plum and the Peach." It is published.

The Rev. Canon C. S. Palmer, Rector of Eardisley, and Dr. Q. R. Darling were guests amongst about fifty Members with their visitors, of which the list is here given :—

The President (Mr. T. Hutchinson), Revs. C. B. Caldicott, H. M. Evill, P. H. Fernandez, C Harington, A. G. Jones, E. King

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King, Preb. W. H. Lambert, C. G. Ledger, A. Ley, Claud Lighton, A. H. McLaughlin, H. B. D. Marshall, W. E. T. Morgan, and F. E. W. Wilmot, Capt. T. L. Morgan. Messrs. T. S. Aldis, F. J. Boulton, G. M. Brierley, J. U. Caldicott, R. Clarke, J. E. P. Davies, H. Easton, E. A. Gowring, F. S. Hovil, F. R. Kempson, C. T. Lilwall, J. W. Lloyd, George Marshall (The Batch), G. H. Phillott, J. W. Stephens, W. H. Steward, Alfred Watkins, and T. H. Winterbourn, with H. Cecil Moore, Honorary Secretary, and James B. Pilley, Assistant Secretary.

Visitors—Rev. Canon C. S. Palmer, Rev. J. H. Craft, Dr. Q. R. Darling; Messrs. Bayliss, W. J. Boycott, E. S. Cobbold (Hon. Secretary of the Caradoc Club), A. J. Garstone, E. Lewis (Kington), Thomas Lewis (Penrhos, Lyonshall, our local guide for Offa's Dyke), and S. Parker, of Kington.

THE UPPER HOUSE, EARDISLEY.

After dinner, a very interesting old black and white house, called the Upper House, on the Kington Road, at the north end of the village, was visited, and, by the kind invitation of the occupiers, its interior was inspected. The lavish employment of huge oak beams, principals, and rafters, of a scantling far beyond the necessary proportions for support and stability, bespoke the days when oak was plentiful, before the neighbourhood was disafforested. A surprise here occurred in finding a piscina built into a wall of one of the upper rooms.

OAK TREES.

Some Members visited the grand specimen of the great oak tree on the right of the road three quarters of a mile west of the New Inn, at the Great Oak British School. It is represented between pages 112 and 113 of *Transactions*, 1899, with an estimated girth of 29 feet at five feet from the ground.

Mr. Moore measured the three oak trees in the meadow north of and adjoining the railway station. The largest girth, at 5 feet from the ground, was that of the tree nearest the station: 22 feet 6 inches. The girth of the tree at the farthest northern end of the field was 19 feet 1 inch; and that of the intermediate tree, 16 feet 3 inches.

The girth of the fine yew tree at the eastern end of Eardisley Churchyard was 16 feet 1 inch.

The party assembled again on the site of the old moated border Castle of Eardisley, immediately west of the Church, to hear the reading by the Rev. R. H. Warner of the paper he had prepared on "Eardisley and its Castle." Its conclusion was prevented by the warning that the departure of the homeward train was due, and that only a few minutes remained for a visit to Eardisley Church.

The limited time at our disposal for inspection of the Church was a subject of the greatest regret. The building contains a little of

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"THE UPPER HOUSE," EARDISLEY.

To. 24. To face No. 25, between pages 240 and 241. *Photo. by A. Watkins.*

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"THE UPPER HOUSE," EARDISLEY.

No. 25. To face No. 23, between pages 240 and 241. *Photo. by A. Watkins.*

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OFFA'S DYKE. "THE THREE SHEPHERDS." THREE YEW TREES ON THE EMBANKMENT OF OFFA'S DYKE, RUSHOCK HILL, NEAR KINGTON.

No. 26. To face page 241. *Photo. by E. Lewis.*

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12th century, and more of 14th century work, and possesses a valuable specimen of an elaborately carved Norman font, with Runic ornamentation.

The solution of a built-up opening in one of the south pillars of the nave was given by Mr. Kempson as the original entrance of a staircase to a previously constructed building of which neither trace nor history remains. A beautiful lych-gate, restored in 1863 in memory of Henry Clelan, a recent vicar of the parish, occupies the eastern entrance to the churchyard.

Eardisley is in the hundred of Huntington. Its Church and history are treated in the "Continuation," by Rev. M. G. Watkins, of "Duncumb's History of the County of Hereford." A drawing of the Norman Font is given opposite page 48. The date is said to be about 1160 A.D.

The train leaving Eardisley at 6-54 p.m., conveyed the Hereford members homewards after a well-occupied day.

MAPS REQUIRED FOR OFFA'S DYKE.

The Ordnance Survey map, on the scale of 1 inch to 1 mile, for the district traversed to-day is Sheet 197.

On the scale of 6 inches to 1 mile, for tracing Offa's Dyke. Commencing from the river Wye at the boundary between the parishes of Bridge Sollars and Byford, the following maps are required. Herefordshire, Sheets XXXII. N.E., XXV. S.E., and XXV. N.E., where the traces of the Dyke end on the main road between Devereux Wootton and Shoals Bank, two miles S S.W. of Weobley. For use in further reference we will call this point **X**.

For the missing link of its course towards Holme Marsh, Sheet XXV. N.W. will be required. For the traces at Holme Marsh, Sheet XVIII. S.W.; near Lynhales, XVII. S.E. For its probable course through Lyonshall Park Wood, and its alignment marked north of the Titley to Kington railway line, 260 yards west of Titley station, Sheet XVII. N.E.

On Herefordshire, Sheet X., S.E., a length of about 120 yards is marked 700 yards eastward of the southern end of Flinsham Pool. On the same Map is marked, upon the elevation of 1130 to 1140 feet, a length of nearly one mile under the southern summit of Rushock Hill, whence its course is westerly upon the flank of Knill Garraway. Upon Sheet 180, an elevation of 1,245 feet is given upon this hill. Three yew trees, locally called "The Three Shepherds," growing upon the embankment of the ditch on Rushock Hill, form a conspicuous landmark upon the sky-line.

On Sheet X., S.W., the prolongation of the Dyke is marked going for the length of a mile, round the western summit, 1,226 feet high, of Herrock Hill, whence leaving Herefordshire, on crossing the

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streamlet, tributary to Hindwell Brook, it resumes its northerly course in Radnorshire by Ditch Hill Cottage, along the western flank of the ancient Camp on Burva Bank.

ROWE DITCH.

On Herefordshire Sheet, XVIII., N.W., will be found the southern extremity of Rowe Ditch, near Byletts, 5¼ miles distant from, and in the same direction as, Offa's Dyke from the point previously called X (*e.g.* on the main road between Devereux Wootton and Shoals Bank, two miles S.S.W. of Weobley).

To pursue the prolongation northwards of Rowe Ditch, Sheet XI., S.W., must be consulted. The total length of Rowe Ditch is about two miles. Its northern extremity reaches the main road (Shobdon to Kington) near Milton Cross, one mile east of Staunton Park, in the parish of Staunton-on-Arrow. This said situation is two miles eastwards of the ancient Camp of Wapley Hill, more generally known, locally, as "The Warren."

As to the meaning of the term "Byletts," some explanation will be found in the following notes:—

BYLETTS AT PEMBRIDGE.

In a letter to Mr. Moore, Mr. James G. Wood makes the following remarks:—

In *Transactions*, 1901, page 151, I suggested that the termination of Rowe-Ditch, near Byletts, may possibly have obtained this unusual name from one of the many forms of "geat" and "yat" (iete of Domesday), analagous to the yats south of Hereford enumerated upon that page. I am now convinced that "Byletts" has quite another origin.

There is a long list of words indicating a secondary stream on a river-course—sometimes natural, sometimes artificial—such as by-course, by-cut, by-channel, by-wash, and by-lead. (See Murray's Oxf. Dict., s.v. By—III. b.).

The dialect form of "lead" is *leat* (O.E. gelæt) = a watercourse. Hence we should have by-leat or by-let.

A learned friend, who knows Shropshire well, tells me that in that county a "Bylet" means a piece of land by the side of a stream, which, by the shifting of the course of the stream, has been lost to one side and acquired by the other.

This may happen wherever there has been a secondary stream, and that has in course of time become the main stream; while the original main stream has closed up.

Thus, by a common transference, the name of the side-stream which has caused the acquisition has become the name of the land acquired.

Similarly I find (in the English Dialect Dictionary) that in Cheshire *Byflete* means "a piece of land cut off by the change of a

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river's course which used to belong to the other side." "Byflete" (= by + flete, A.S. i-e. fleot, O.N. fljot, a stream) was obviously in this case also the by—or secondary—stream, and has transferred its name to the land cut off.

If you look at the 6-inch map west of Pembridge you will see N. and N.W. of Byletts how the sinuosities of the Arrow are duplicated by numerous *byletts* or *byfletes* in the original sense of these words.

"Byfleet" Bridge in Surrey takes its name from a stream of this description—a tributary of the Surrey Wey.

NOTES ON ROWE DITCH.

By James W. Lloyd.

In the volume of our *Transactions*, 1900, to April 1902, are two valuable and interesting papers—one, on page 145, by Mr. H. C. Moore, the other, on page 148, by Mr. James G. Wood—treating upon Offa's Dyke and Rowe Ditch, the latter of which some of our members inspected at the Pembridge meeting on the 28th May, 1901.

Without entering upon the subject of Offa's Dyke and the attempt of the writers of the papers mentioned to connect Rowe Ditch with the Dyke, and thus question, or ignore, several well-defined portions of earthworks which according to all previous authorities have been accepted as portions of Offa's great work, I wish to call attention to an ancient embankment or earthwork which crosses the narrow valley or defile about a mile westward of New Radnor, known, and marked on Ordnance Map as "Ditch bank" In a most interesting paper, contributed to "Archæologia Cambrensis," 4th ser., vol. 10., pp. 302—4, by the late Mr. R. W. Banks, on "the Boundary of Herefordshire in the time of Henry III.," and which continued until the alterations made by the Stat. 27, Henry VIII., c 26, whereby the county of Radnor was created, the learned writer quotes in extenso from "Inquisitiones Post Mortem ex bundello incerti temp. Henry III., No. 154," an inquisition defining the boundaries of Herefordshire, in which occur the names of many places, very differently spelt, but which Mr. Banks was able to identify with places still existing either within, or near, the present county boundary. After reaching Brilley and Michaelchurch, the document proceeds, "Et Claudestre per divisas intra Elveil et Claudestre usque ad Rugedich ultra Radenoure et de Rogedich (*sic*) usque in Luggam ex opposito de *Pullelit." Mr. Banks after identifying all places mentioned from Ludlow to this point says, "Rugeditch seems to be the mound or earthwork which ran across the valley and formed there the Welsh boundary of the parish of New Radnor. It may still be seen on the right hand side of the turnpike road to Penybont. In the Ordnance Survey it is named Bankditch."

* Pilleth.

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I think there can be no doubt as to the correctness of Mr. Bank's identification of the "Rugeditch," which, although of much smaller proportions than "Rowe ditch," closely resembles that work, and there also appears to be a close affinity in the names, one of which thus possesses a very respectable antiquity.

It is hoped that, by thus calling attention to an earthwork bearing a name so similar and situated comparatively within the same district, some clue may be obtained to the origin of the designation "Roweditch."

The attention of students of the Dyke and its course may be directed to an able paper, also by the late Mr. R. W. Banks, on "Herefordshire and its Welsh Border during the Saxon period."—"Arch. Camb.", 4th series, vol. 13, p. 19 and seq.

THE ROWE-DITCH IN RADNOR.

By James G. Wood.

Mr. James W. Lloyd's note calls for a few observations in reply.

In the first place, the reprint (which he quotes from) in Arch. Camb. of the Inquisition as to the boundaries of Herefordshire requires correction. I have examined the original, with the assistance of my friend Mr. W. J. Hardy, F.S.A. The place-name twice printed "Claudestre" should have been printed "Glandestre" or "Glaudestre." This is important, so as to prevent a false conjecture which would associate the name with the Welsh "clawdd"; the initial "c" of which does not suffer mutation. Other corrections do not touch the present question.

The description of the boundary north of the Wye leaves no room for doubt that the "Rugedich" or "Rogedich" of the Inquisition is the well-defined portion of Offa's Dyke between Knill and the River Lugg. The word is a corrupted form of "ræw-dic"; and etymologically identical with it; for the letter "g," from its peculiar use in Saxon, is often found interpolated by careless transcribers; whence the term "Rough Ditch" mentioned in my former note in the *Transactions* of 1901, page 149.

We thus have the Dyke called Stan-ræw (stone row) in Gloucestershire; and Rowe ditch at Hereford, and east of Radnor, and also, as I still think, across the Arrow near Pembridge.

As to the second paper mentioned by Mr. Lloyd, I apprehend that, after all that has since been written, none will accept the assertion in it that the Dyke ended at Bridge Sollars; if anything more is meant than that the line was there interrupted. That it did extend to the Severn Sea, as stated by Asser, cannot be questioned by those who have examined the Gloucestershire portion.

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OFFA'S DYKE AND ROWE DITCH.

The following memoranda are repeated from the programme of the day's proceedings :—

It may be mentioned—(1) That hitherto no satisfactory or reliable solution of the track of Offa's Dyke has been discovered between Holme Marsh and where the Dyke enters the road between Moorhampton and Weobley, two miles S.S.W. of Weobley between Devereux Wootton and Shoals Bank. Holme Marsh is situated 5 miles north-west of that recognised extremity of the Dyke.

(2) That Holme Marsh is situated 3¼ miles south-west of the southern extremity of Rowe Ditch at the Byletts, Pembridge, of which a description with two illustrations will be found in *Transactions*, 1901, p. 145.

(3) That Rowe Ditch has all the characteristics in form and dimensions of other well-known and recognised parts of 'Offa's Dyke; that its situation is the direct prolongation northwards of the line of the Dyke over Garnons Hill, under the western base of Lady Lift, to its termination at the aforesaid locality between Devereux Wootton and Shoals Bank, and at the distance of 5⅓ miles from it.

(3) That Rowe Ditch can be traced northwards for a total length of very nearly two miles, where, near Milton Cross, it reaches the main road one mile east of the Park at Staunton-on-Arrow.

REFERENCES. OFFA, OFFA'S DYKE, RIVER WYE AS THE WELSH BOUNDARY, &c.

"*Transactions* of the Woolhope Naturalists' Field Club," 1883, p. 55; 1888, p. 204; 1889, pp. 319—320; 1897, p. 251; 1901, pp. 145, 148 *et seq.*

Jones' "History of Breconshire," Preface, page vii.

In "History of England under the Anglo-Saxon Kings," by Dr. J. M. Lappenberg, translated from the German by Benjamin Thorpe, F.S.A., 2 volumes, published by John Murray, 1845. In Vol. 1, p. 230, we read that "In the early part of his reign Offa had repulsed the Britons at Hereford,* and subsequently devastated Deheubarth or South Wales.† . . . . . "The last Anglo-Saxon King, Harold, ordered that every Briton who should appear *armed* on this side Offa's Dyke should have his right hand struck off." (The italics are mine.—H. C. M.)

Vol. 1, p. 237. In a note we have the information that Offa was buried in a Chapel just without Bedford (R. Wend, t. 1, p. 262, T.)

"Councils and Ecclesiastical Documents relating to Great Britain and Ireland." Edited after Spelman and Wilkins by Arthur

* Annal. Camb., Brut-y-Tywysogion, a. 76c.
† Annal. Camb., 778. Brut-y-Tywysogion, a. 776.

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West Hadden, B.D., and Wm. Stubbs, M.A., Regius Professor of Modern History (Oxford: Clarendon Press, 1869). Vol. 1, page 205. A.D. 884 or 885. South Welsh Princes, and shortly after, the Prince of Gwynedd, under the protection of Alfred (*Asser*), and A.D. 922, homagers to Eadward the Elder (*Anglo-Sax. Chron.* a. 922), and A.D 926, to Æthelstan, who fixes the Wye as the Welsh boundary (*Laws of Howel Dda*: Anglo-Sax. Chron, a. 926; *Kemble*, C.D., 352, 353, 363, 364, 367, 424, 426, 451, 1103, 1107, 1110, 1112; *Flor. Wig.*, a. 926; *W. Malm*, G. R. II.).

Page 201. A.D. 777 or 790. Final boundary fixed between Wales and Mercia, viz., Offa's Dyke from Mouth of Dee to Mouth of Wye (*Asser*, *Ann. Cam.*, a. 790; *Brut-y-Tywysog. Higden ap. Gale*, i., 194).

OFFA'S DYKE.

THE GAP IN THE WEOBLEY DISTRICT.

By Alfred Watkins.

The investigation, of which I now give some details, does not concern any question whether the undoubted dyke which runs up the hillside to Holme Marsh, Lyonshall, and the equally plainly defined dyke which passes through Upperton Farm, Yazor, and runs alongside the lane leading to the Claypits, along the western base of Ladylift Hill, are both parts of the true Offa's Dyke.

I simply take the fact that a dyke leads to each of the two points, and that it is not unreasonable to surmise that the gap between them was at one time bridged by a dyke of which the traces are lost or obscured.

My work—to which many half-days' walking over the ground have been devoted—commenced immediately after the publication of Mr. H. C. Moore's paper in *Transactions* 1897, p. 251. My first basis was the fact, there recorded, that "From the Clay Pits to Lyonshall, about six miles north-west, through the intermediate parish of Sarnesfield, no trace of the ditch has been found," and the second basis was the suggestion made by Mr. Moore that the "Rowe Ditch" at Pembridge might possibly have been linked to "Offa's Dyke" at the Clay Pits. I therefore included the ground south of Pembridge in my search.

My first walk resulted in an important "find," unfortunately the only one I have to record, for the rest of my record is negative evidence.

The dyke running up from Upperton to the Clay Pits (Ordnance Map, 6 inches to 1 mile, Herefordshire, Sheet XXV., S.E.) is very plain and well known on the left side of the lane, the embankment being well marked. There appear to be some traces of it in the cottage gardens where the lane branches, and then all knowledge of it was lost. But on entering the wood (marked Yazor Wood in the map) and generally

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keeping in the direction of the chief footpath nearest the 600 ft. contour line (running N.N.W. by N.) I found a perfect and continuous dyke (if it is not a sunken road), which commences at once, and takes the desired general direction. It takes a serpentine course through the wood, forming a curve at first to the left of the path; the path then runs along its course for a short distance. It then leaves the path and forms a curve on the right, re-entering the course of the path a little further on. In this part of the coppice—chiefly oak—it is a dyke, or cutting, only, with no embankment, and is not marked by holly trees. But it soon passes through a newer fir plantation, and here its course is marked by a line of ancient holly trees in the midst of the thick fir wood. On leaving the wood for the open hill side, the line of holly trees (with a slight embankment) is continuous, the path leaving the wood by the same course. Here it enters Sheet XXV. N.E. of the 6-inch map and enters the Hereford and Weobley main road between the 10th and 11th milestone close to the altitude of 470 marked on the map.

At the point where it enters the road diagonally, both embankment and dyke are well marked, and the line of ancient holly trees following its course now becomes—without a break of a single yard—the well-known tall holly hedge, which lines the main road past the Shoals Bank down the hill as far as the 11th milestone at Ivy Cottage. I can detect some traces of the hollow dyke in the holly hedge at several points, the present road being cut much deeper as it comes down the hill. There are also several yew trees along its course. If it is the dyke which enters the road, I have no doubt that it continues in the course of the road as far as Ivy Cottage. Any mention of this part of the dyke entering the Weobley road dates from my discovery of it.

Beyond Ivy Cottage (at the bottom of Shoals Bank) all is uncertain. There are a few holly trees lining the road, and a tall holly hedge existed on the road close to Garnstone Lodge until taken up by Sir Joseph Verdin a few years ago. I have vainly searched for any trace of a dyke leaving the road in the fields to the left. There is a short length of a deep road or dyke to the west of Fernhill (11th milestone), but it bends at right angles and does not fit in with any likely course of Offa's Dyke. Beyond Garnstone Lodge the first hedge leaving the road (diagonally) on the west, is lined with holly trees, and I fancy I can trace faint suggestions of a dyke (with more holly and yew trees) in a line with this, passing the Ley farm, where it almost touches the garden on the eastern side, then down a lane and along a dingle straight in the direction of Little Sarnesfield. But it is weak evidence, and I only mention it as being the best I have seen in much hunting the fields about Weobley.

There are remains of an old road leading from Dilwyn to Kinnersley near to the present road, parts of which being much like a dyke seem to have put several investigators on a false scent. It can be seen close to the present road near Newton Court. Then it plainly

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runs through the fields parallel to the present road but south of it, commencing opposite Little Sarnesfield, running past the Dairy House, the Leather Mill, into a little wood where the new road, the old road, and a stream from a fish pond all cross at the same point. From this spot it is to be next seen north of the road and is very plain a little to the east of Sarnesfield Court. (It is erroneously referred to in Jones' Breconshire at this point as being Offa's Dyke). This old pack road, with several yew trees on its course, passes into Sarnesfield churchyard, and I have traced portions of it—at one point marked by two yews on the roadside—as far as Kinnersley, where in Kinnersley Castle grounds parts of it are usually full of water. It is here joined by another ancient disused road, coming from the north through Logaston Common and Highfield Wood. The course of this old road past Sarnesfield is at right angles to the general course of Offa's Dyke.

I have heard it suggested that Offa's Dyke came into this road along the lane from Hackley Common, but careful examination on two occasions through the Common and past Batch Farm showed no evidence of it.

Two days' walking, with Holme Marsh as a starting point, also yielded negative results. There are slight indications of something coming into the Almeley road, alongside a footpath, and a depression is to be seen at the entrance to Summer Court, but I could find no further traces in the Almeley direction, or in the district about Eccles Alley. A lane between the hamlet of Holme Marsh and Upper Holme Farm is lined with holly trees, which lead to the entrance to a footpath for The Stocks. I followed up this path past The Stocks, Tan House, and Woonton with no result, although this appears to be the most probable course. There are signs of an ancient road parallel to the present one crossing a brook between Woonton and Ferney Common.

At Holme Marsh an old man volunteered some information with regard to the undoubted well marked dyke, "It's called Rowe Ditch here in Mr. Moore's grounds, but over about Lynhales they call it Off's Dyke." This is peculiarly interesting, as being a third instance (the others at Pembridge and Hereford) of the generic term Rowe Ditch being applied to a dyke in this county, and the three being at considerable distances apart.

Now to the third point of the triangle which limits the "gap" under investigation. At Pembridge the Rowe Ditch comes to the high road near the Byletts, and there apparently stops. In trying to trace a southern extension from this point, I found traces of it along the lane as far as Pitfield Farm, but careful search to the south as far as Barewood and Grimsditch gave no result. The latter suggestive name is not applied to the boundary stone on the road, nor to a cottage close to it, but to a couple of dismantled cottages a little north of this, close to Tippet's brook.

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I have mentioned holly and yew trees several times, but I do not regard them as peculiar to Offa's Dyke, but rather as being evidence of some kind of ancient road or dyke. In this quarter of Herefordshire holly trees are frequent on the oldest roads, but not on modern ones.

I regret the small results from my surveys, but I think it well to record even negative findings as an aid to future workers. I shall not attempt to speculate on the question whether Offa's Dyke ever did exist in what now appears to be a gap in its course, or whether it was left incomplete.

A few words of comment on Mr. J. G. Wood's important paper in the *Transactions of the Woolhope Club*, 1901, pp. 148—151, on parts of Offa's Dyke may be permissible here. Mr. Wood is inclined to reject the Dyke at Lyonshall as Offa's on account of its taking up such an unfavourable defensive position. But is this argument—taken by itself—quite sound? Offa's Dyke, whatever its purpose, aimed at being a continuous line across several counties of hilly and broken ground. To attain this continuity, however cleverly the designer in the majority of cases took the Welsh side of the hills encountered, there must have been a few cases in which there was no other way but, on leaving one hill, to go straight across a valley and take up an unavoidably weak position on the slope of an opposite hill. At Lyonshall, for instance, the course demands the crossing of a long valley, and there is no way of going round. At Garnons Hill again, the Dyke has climbed to the top of the hill from the river, and to keep a strong position should have continued towards Mansel Gamage. But the designer wanted to get over to the slopes of Ladylift, and there to take up a strong position, and to do this he took the shortest cut across the valley, descending to Upperton in a weak position commanded by higher ground on the Welsh side.

Turning to another part of Mr. Wood's paper, I think he can bring strong evidence to support his claim for a previously unsuspected course of Offa's Dyke from Hereford, through Mordiford, Sufton, and Checkley, and on by Marcle Hill and Ridge Hill. *

I have frequent opportunities of seeing its supposed course as far as Putley Cockshoot, and the evidence seems to me to be strong. Half-way up Eign-hill (main road) there appears to be a bit of it on the right-hand side, almost blending with the road bank. It probably here formed the boundary of the tiny parish of The Vineyard, of which I am overseer of the poor for a total population (at last census) of 13. Then there is a considerable Dyke at many points on the left of the road through Hampton Bishop, signs of dyke (or old road) opposite Sufton mansion, the cutting behind Old Sufton, the deep dyke (or old road) descending from the Mordiford Cookshoot to the "Clouds" Farm

* In the name "Old Sufton" I believe there is a direct reference to the Dyke. "Sough" (pronounced "Suff") is still applied in some parts of England to earthworks in the nature of a ditch or bank; more usually the former. So the name means "the homestead by the Old Dyke."
Of course in Marcle (mearc-léah) we have a still more direct reference; the "mark" being the territorial limit which in fact gave its name to Mercia.—JAMES G. WOOD.

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traces further down at Checkley, and a well-marked course in the woods of Park Coppice.

I can also testify to the fine military entrenchment on the top of the Ridge Hill, at the point where it is crossed by the road between Sollars Hope and Much Marcle.*

REMARKS BY MR. MOORE, IN REPLY TO MR. WATKINS' PAPER.

Mr. Moore thanked Mr. Watkins for his paper, valuable as the evidence of one who had so well trodden the neutral ground in question. So far as Mr. Moore had followed Mr. Watkins' tracks, collated evidence of local residents, and sifted the writings of others, he coincided upon all points with Mr. Watkins' summary, and accorded with him in his comments upon Mr. Wood's papers. With reference to the concluding paragraphs, the traces of a defensive earthwork are obvious in many places between Ross and Hereford.

The cutting upon the slope of the hill at "Clouds," in itself strikingly suggestive of Clawdd Offa (Offa's Dyke), in the parish of Mordiford, is more characteristic of a defensive work than of an ancient British road, owing to the traces of a raised exterior parapet, an adjunct involving unnecessary extra labour for a road.

Mr. Moore had also received corroboration of the extension, through the wood itself, of the cutting, or ditch, east and west of Park Coppice, in Devereux Park, Stoke Edith.

Again, Mr. Moore agreed with Mr. Watkins that the embankments and ditches from Lyonshall to Holme Marsh are prolongations in a southerly course of the defensive earthworks visible near Titley railway station on the south side of the river Arrow: he would moreover add that the fragment of earthwork, 120 yards or more in length, eastwards of Flinsham Pool, on the north side of the river, was part and parcel of, and connected with, the well marked characteristic vestiges of Offa's Dyke on Rushock Hill. See Ordnance Map, Herefordshire, X., S.E.

To the question by a member, "How do you account for the two works, the one at Rowe Ditch, and the more westerly one at Lyonshall, and by whom? and for what object were they both built?" Mr. Moore replied:—I see nothing extraordinary, inconsistent, or unusual in the existence of two dykes, nor is it impossible that both should have been built under the instructions of the same commander. Not only have we the documentary evidence from the Gwentian Brut-y-Tywysogion, that in A.D. 784, Offa, owing to his Mercian territory being devastated by the Cymry, "*made a dyke a second time nearer to him*," but we also have two dykes in evidence to this day in numerous places.

* I presume that the entrenchment mentioned by Mr. Alfred Watkins is the Oldbury Camp, south of the Sollars Hope and Marcle road. It is in the length north of that road, and extending along the Ridge, above the Hoar Wood, as far as Hooper's Oak, that the most typical piece of the Dyke is to be seen.—JAMES G. WOOD

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Commencing from the northern parts of Shropshire, in the province of Flavia Cæsariensis, are certain fragments of two Dykes at the distance of sometimes one mile, sometimes three miles apart. According to Encyclopædia Britannica, Vol. XXI., p. 841, to which the signature T: F. H. is appended, "About A.D. 765 Offa caused Watts' Dyke to be erected to guard against the incursions of the Welsh, and later erected parallel with it, two miles to the west, the entrenchment known as Offa's Dyke, which, extending from the Wye near Hereford to the parish of Mold in Flintshire, forms in some places a well-defined boundary between Shropshire and Montgomery."

In "Archæologia Cambrensis," October 1901, p. 279, will be found a paper read by John M. E. Lloyd at Newtown on a Dyke, near the borders of Shropshire and Montgomeryshire, which is known locally as the Wanten or Wanton Dyke.

From our county of Herefordshire northwards the traces of Offa's Dyke will be found in the following Ordnance Maps, on the scale of 1 inch to one mile, in Radnorshire on Sheet 180; through Montgomeryshire on Sheet 165; on the borders of Montgomeryshire and Shropshire on Sheet 151; thence on Sheets 137, 121, 108, 83 and 96.

On Sheet 137, two miles north of Oswestry, Offa's Dyke lies fully three miles west of Watts' Dyke, both of the Dykes being situated west of the Gobowen and Oswestry branch railway.

On Sheet 121, near Ruabon, Offa's Dyke approaches within one mile west of Watts' Dyke; near Wrexham Offa's Dyke is more than two miles distant westwards. The line of railway from Ruabon through Wrexham to Mold runs, as a general rule, between the two Dykes, and close to Wrexham the railway line runs along the course of Watts' Dyke.

On Sheet 108, Watts' Dyke continues on the right hand, *i.e*, east, of the railway line to Mold. For the length of twelve miles through Mold, as far as Flint, Offa's Dyke is not marked on the Map. Along the course of Watts' Dyke, however, the following names occur: Clawdd Offa, 5 miles S.E. from Mold; Bryn Offa (Offa's Hill), and Llwyn Offa (Offa's Grove), both of them 2 miles N.E from Mold; and again the name Clawdd Offa, 2 miles N. from Mold and 4 miles S. from Flint.

On Sheet 83 and 96, the remains of Watts' Dyke are indicated terminating near Holywell Station, on the Chester and Holyhead branch of the L. & N.W. Railway, on the estuary of the river Dee.

Of the two Dykes in Herefordshire, the Rowe Ditch at Pembridge and the embankment from Lyonshall to Holme Marsh, we shall never know which was erected first. We must rest content with conjecture only. If Rowe Ditch was the earliest erected, the Lyonshall portion would occupy an advanced post, including additional territory, and 3½ miles south-westwards. Or, if the Lyonshall portion was first erected and rased to the ground by incursions from the west, Offa would have, as in the case cited above, "made a dyke a second time nearer to him."

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The objects of the Dyke are twofold :—

1. The definition simply of the boundary of the Kingdom of Mercia.

2. A boundary presenting more or less an obstacle against cattle-raiding, erected at a period when forests abounded in our country, and the wealth of a kingdom was measured by its possession of cattle.

The custom of making earthen ramparts as boundaries prevailed centuries before Offa's time. In Bible-history we read of fenced cities. Some are of opinion that some of the Dykes in our kingdom were made before the time of the Roman occupation : *e.g.*, the Wansdyke, said to be cut by the Roman road from Silchester to Bath ; the Grimsdyke in Berkshire, cut in Blenheim Park by the Akeman Street from Cirencester to Bicester, &c.

There are numerous Dykes in different quarters of the kingdom. The custom of cutting Dykes continued after Offa's time. Amongst others we may mention that erected by the East Anglian Kings as their boundary from Mercia upon their west in the century following Offa's death, of which we read in " History of England under the Anglo-Saxon Kings," by Dr. J. M. Lappenberg, Vol. 1, p. 242, translated from the German by Benjamin Thorpe, F.S.A. (John Murray, 1845) :—" As Offa against the Welsh, so had the first Kings of East-Anglia raised a vast rampart, defended by a ditch, against Mercia, which bore the name of the Reckendyke, * though known at a later period amongst the common people as St. Edmund's, sometimes the Devil's, Cnut's, or Henry the First's."†

In earlier days we had a more formidable boundary in the north of the Wall of Hadrian from the Tyne to the Solway Firth (A.D. 120—129) ; and further north the turf wall from the Firth of Forth to the Firth of Clyde, replacing Agricola's rampart, known as Antonine's Wall, ‡ built about A.D. 140, by Lollius Urbicus, legate in Britian.

On a colossal scale we have an instance of an ancient boundary and formidable obstacle combined in the Great Wall of China, built about B.C. 300, carried over a tract of 1,500 miles, comprising mountains, valleys, and rivers bridged over.

On a less formidable scale, the many hundred miles of country in South Africa under the " Block-house " system and barbed-wire entanglements adopted by Lord Kitchener, often proved temporarily an effectual barrier, showing that even in the present day a military engineer does not despise a comparatively small obstacle.

* The Devil's Ditch is situated two miles west of Newmarket in Cambridgeshire, and four miles west of Swaffham in Norfolk.

† In Cambridgeshire there are many defensive earthworks or dykes, *e.g.*, Worsted Lodge Dyke (Worsted Street), the great Fleam Dyke, Pampisford Ditch, and the Brand or Heydon Ditch ; all of them crossing the Icknield Way. To these add the filled up trench called " War Ditches." See the article Prehistoric Archæology of Cambridgeshire in " Natural History of Cambridgeshire," pp. 243, seq., prepared for the British Association Meeting at Cambridge, 1904.

‡ Antonine's Wall is known locally as " Graham's Dyke " (*Roman Britain*, by Conybeare, p. 198), possibly originally Grimes' Dyke, or Grims Dyke, or its synonym in Herefordshire, Grimsditch, close to the southern end of Rowe Ditch, near Pembridge.—See *Transactions* 1901, pp. 135, 136.

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As an example of an extensive boundary, witness the barrier of palisades west of Manchuria, a demarcation line west of the Liao river, and of the neutral zone between Manchuria and the Chinese territory; a second line further eastwards; again, a third line separating Manchuria from Korea. The three barriers of palisades extend more than 1,000 miles in the aggregate.

Mr. Moore concluded by reading the following letter from Mr. James G. Wood, F.S.A., who, doubting that "the huge embankment" near Holme Marsh was the work of Offa, suggests that it was a Welsh earthwork.

NOTES BY JAMES G. WOOD.

Dear Mr. Moore,—I enclose a few notes which may be of interest for your outing next Tuesday. Perhaps Mr. Watkins might like to incorporate what I have written with his paper on the Dyke. I wish I could be with you.

I have said nothing as to the Dyke at Lyonshall being on the wrong side of the hill—as you queried the fact But on reference again to the 6-inch I find that a good piece must have been on the 600 line with a 700 line westward of it. This is quite contrary to Offa's general plan, and it is quite possible that he suffered for neglecting it in this instance, and that it was a weakness at this spot, and the inability to watch the Welsh therefrom, that gave them a chance to break the lines there.

The following entries in the Welsh chronicles may have some bearing on this question :—

In the Brut-y-Tywysogion (Gwentian) we read :

"A.D. 765. The Cymry devastated Mercia and defeated the Saxons and spoiled them sorely; on which account Offa, King of Mercia, made the great Dyke called Offa's Dyke to divide Wales from Mercia, which still remains.

"A.D. 776. The men of Gwent and Glamorgan rose and entered Mercia, and razed Offa's Dyke level with the ground; and then returned with great spoil.

"A.D. 784. Mercia devastated by the Cymry; and Offa *made a Dyke a second time nearer to him*, leaving a piece of country between Wye and Severn, where is the tribe of Elystan Glodrydd, where they became one of the five royal tribes of the Cymry."

By "leaving a piece of country (lle gwlad)" in the last entry, I understand it to be meant that Offa abandoned a portion of the territory he had previously seized. The description "between the Wye and Severn" exactly fits the district under consideration; the Principality of Elystan Glodrydd being well-known as stretching northward from the Wye to the eastward of Powis.

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The five Royal Tribes are thus given in the Iolo MSS., p. 406:

"Cadell, son of Rhodri the Great, in South Wales,
"Mervyn, son of Rhodri the Great, in Powis,
"Anarawd, son of Rhodri the Great, in North Wales,
"Morgan Mwynfawr in Glamorgan,
"Elystan Glodrydd between the Wye and Severn."

The other "Brut" is not so specific on this matter as the Gwentian. It does not mention the destruction or renewal of the Dyke; and its MSS differ. One MS. says that, in 766, Offa destroyed the South Wales men; another that the South Wales men devastated the island as far as Offa. In 784 two MSS. say only that Offa spoiled the Britons in summer time; but the third is much fuller, and tells that first in the summer the Welsh devastated the territory of Offa, and then "Offa caused a dyke to be made as a boundary between him and Wales to enable him the more easily to withstand the attacks of his enemies; and that is called Offa's Dyke from that time to this day."

The two "Bruts" are thus in accord in fixing 784 as the date of the final completion of the Dyke; while the shifting of part of it eastward is known only to the author of the Gwentian.

The solution, therefore, may be that the length thus destroyed by the Welsh is the piece from Rushock Hill to Moorhampton via Titley and Lyonshall; of which only small fragments remain. I should much doubt "the huge embankment" near Holme Marsh as being part of the work of Offa. His is too uniform in height and structure throughout to be mistaken. It is possible that this embankment was a Welsh earthwork made at the time mentioned.

Then the new line of A.D. 784 started north from Moorhampton *viâ* the Rowe Ditch near Pembridge, and on to near Milton Cross; and then swept round westward through Staunton-on-Arrow (in the line indicated by me in a former paper) to rejoin the old line on Rushock Hill, a little N.E. of the yews.

If this suggestion be well founded, there should be a general absence of yews and hollies from the Titley and Lyonshall line, but a recurrence of them on the Staunton-on-Arrow line. But their occurrence anywhere should be carefully noted.

Since the above has been in the press, we have received in a private letter the following:—

NOTES RESPECTING WATT'S (OR WAT'S) DYKE.

By James G. Wood.

All that has been recognised of this Dyke is on Sheets 79 and 74 of the *Old* Ordnance Survey—one inch to one mile.

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Starting at Holywell, on the bank of the Dee estuary, it goes in a nearly straight line S.E. to Caergwrle (13 miles). At this point, about 2 miles S.W. at Treiddyn, is the most northern point of the other, or Offa's Dyke.

From Caergwrle it went to Wrexham, bending S.S.W., and W. across Wynnstay Park to the Dee, where, one mile east of the G.W. Railway viaduct, this first length, so far practically continuous, ended.

It does not seem to have entered the area between the Dee and the Ceiriog, but to have started anew on the south bank of the former, about half-a-mile from the junction of the two rivers; and made straight for Hen Dinas ("Old Fort"), otherwise Old Oswestry; thence, with a slight eastward trend, to a point two miles S. of Oswestry, where we finally lose it, unless it has been absorbed by the road to Maesbury, and reappears as "Belan Bank," near Kinnersley. It is to be noted that the dingle on the side of which it reached the Dee is Nant-y-Belan; and that in Welsh "Belan" is an equivalent of the Devil or Grim. *

Offa's Dyke runs more or less parallel with Watts' Dyke, south of Treiddyn, at a distance varying from a mile to three miles. Passing W. of Ruabon it crosses the Dee between the Canal Aqueduct and the G.W.R. Viaduct, strikes through Chirk Park (between the Dee and Ceiriog), crosses the Ceiriog, bounds Denbighshire for about four miles, and strikes south to cross the Vyrnwy at Llanymynech, whence its site is absorbed by the high-road to Welshpool, until it crosses the Severn at *Buttington*, south of which I need not follow it now, except to mention that this last name recurs just before its final termination on the Severn in Tidenham (Gloucestershire); that we have also the *Butts* on its line along Marcle Ridge, and that "Buttington" is only a form of the Low-Latin "Botontinus," defined as "a bank made for a land boundary."

* "Grim [r] is one of the numerous titles of Odin or Woden in the Norse Mythology. The name . . . . . alludes to the disguise beneath the shelter of which Odin, the All-father, performed many of his most singular feats." (Streatfield's *Lincolnshire and the Danes*, p. 63.)

Now just as the Welsh attributed prehistoric remains to the Giants (Ceiri), as the works at Tre'rceiri and Glynceiriog, so the Saxon attributed such things as he could not account for to Woden by one or other of his names. Thus Grimsdyke or Grimsditch became the generic name for a great earthwork. So "Graham's Dyke," one of the names of the Vallum of Antoninus, is but a corruption of Grims Dyke. There is a Grims Ditch near Wallingford; and the great Dyke between Marlborough and Devizes is Wansdyke; *i.e.* Woden's Dyke.

It may be objected that the Grimsditch north of Moorhampton cannot be Offa's work; for the Saxon would have known its origin, and would not have called it Grimsditch. But if, as I believe, that had (like Devil's Ditch or Dyke in many parts of the country) become a generic name, it is possible that the name was given it long after Offa's time, when its origin may have become uncertain or forgotten. (See also *Transactions* 1901, p. 136).

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EARDISLEY AND ITS CASTLE.

By Rev. R. Hyett Warner.

I find nothing to record of Eardisley in Saxon times except that we learn from the Doomsday Survey that at the time of Edward the Confessor it had belonged to the powerful Earl Edwin. When the survey was taken, Eardisley, or Herdesleye, as it is spelt in Doomsday, is returned as in the land of Roger de Laci, who had received this and other estates in Herefordshire from the Conqueror, whose banner he had followed to Hastings. The Record speaks of a wood situated in Eardisley, part, no doubt, of the extensive forests with which a great part of the West of England was at that time covered. Mr. Robinson, in his "Castles of Herefordshire," thinks this wood (silva) may be represented by the well-known Oak, on Hurstway Common, which is undoubtedly of great antiquity. The Return also records that there was in Eardisley *una domus defensabilis*, that is, a house capable of being defended, the precursor, apparently, of the later Norman Castle. The De Laci family do not appear to have held Eardisley for any length of time, as we find it in the possession of the Baskervilles soon after the time of the Doomsday Survey. This family, like many others, came from Normandy, their ancestral home being at Basqueville, a few miles south of Dieppe. The family was widely spread in the West of England, and was connected by marriage with many of the noble houses of Herefordshire. The first reference I have found to any one of the name is in the Cartulary of Gloucester Abbey, in which, under the year 1109, is recorded the return of a Roger Baskerville from his pilgrimage to Jerusalem, and his gift of a hide of land to the Abbey. Others of the name are mentioned in the same Record as benefactors of St. Peter's.

In 1121 Henry I. granted the fee and service of Roger de Baskerville as part of the marriage portion of Sibilla, daughter of Bernard de Newmarch, the conqueror and lord of Brecon, on her marriage with Milo of Gloucester, afterwards created Earl of Hereford. The same Roger appears as witness to a deed executed by this Lady Sibilla, granting certain lands at Little Hereford to a William de Mara, in exchange for land at Bordesley, near Bromsgrove.

In the year 1229, in the 13th year of Henry III., Walter de Baskerville brought an action against William de Braose, and claimed damages, for that the said William had turned a watercourse into Eardisley to the detriment of his free tenement in the said place. I have no information as to the result of the action, but the watercourse of which complaint was made may have had something to do with the triple moat which once defended the Castle, and still surrounds the peaceful farm which occupies its place, and retains the name of "Castle."

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Four years later than this date we find a writ issued to the Sheriff of Hereford, in which he was commanded "to cause a good breach to be made through the woods of Erdelegh, Bromlegh, and Witteney, so that there may be a safe passage between Hereford and Maud's Castle." The royal command confirms the idea of Eardisley and its surroundings suggested by the "silva," or wood, mentioned in Doomsday.

In the year 1251 the Baskervilles became the demesne lords of Eardisley. In that year Humphrey de Bohun, Earl of Hereford, and his wife Eleanor, granted the manor of Eardisley to Walter de Baskerville, and from that time for many generations the history of the parish is closely bound up with that of the Norman house.

In the year 1263 the Welsh, who had again broken out in rebellion, came in great force into Herefordshire, burning and wasting Eardisley, on their way to commit similar depredations at Weobley. In 1278 Edward I. directed the Sheriff of Hereford to take Eardisley Castle into his hands, presumably, in consequence of the frequent disturbances in these parts. It had, apparently, been let by Walter de Baskerville to Roger de Clifford, who had given up possession to the King. The Sheriff was, accordingly, directed to take measures for the safe custody of the Castle until the King should otherwise order. You will readily perceive how important it was that a fortified building like Eardisley should be held by the King in the interests of the public tranquility. Roger de Clifford was, however, permitted to resume possession of the Castle, and we find that on February 6th, 1290, there was issued "a mandate to Master Henry de Bray, escheator this side Trent, to deliver to Richard de Baskerville, brother and heir of Walter de Baskerville, the Castle of Eardisley, which Roger de Clifford, the elder, deceased, held of the said Walter for life only, as appears by inspection of the Chancery rolls."

In the year 1272 the Walter de Baskerville referred to in the above documents had license from the Bishop of Hereford to build an oratory for divine service within the walls of the Castle. The oratory was a frequent adjunct to castles, mansions, and sometimes to churches, for purposes of private devotion. Some of the members have already visited to-day the Upper House Farm, and have seen the chamber there with its arched roof of oak, and the piscina still fixed in position, clearly indicating that the apartment was formerly used for devotional purposes, in accordance with the usages of the time. There are many houses still left in England which retain the ancient oratory, and sometimes a chamber for the priest.

The next event of any importance in the history of the Castle speaks eloquently of the disordered condition of the country during the unhappy reign of Edward II. A case came before a commission of judges appointed by the Crown in June, 1309, on complaint of Miles Pychard, that Walter de Baskerville assaulted him at Over Letton, in

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the County of Hereford, and that Peter le Tailleur, constable of the Castle of Richard de Baskerville, of Eardisley, Walter Cote, Richard Fitz le Vikere, of Eardisley, and Philip, son of Juliana, with others, issuing from that Castle approached his manor of Staunton, broke the doors and locks of his houses, killed Richard de Shoreham, whom they found there, and afterwards returned to the Castle. The entry in the Patent Rolls concludes with the words: "By fine of 20 shillings." If this means the punishment imposed, it was ridiculously inadequate for what on the face of the indictment would appear to be housebreaking and murder, but which in those disordered times would no doubt be regarded in a very different light. The records of the time abound in cases of this kind, and reveal that judges, sheriffs, and juries often allowed the guilty to escape punishment, being in terror of their own lives if they should enforce the law.

You would notice in the Record I have recited the mention of a "Richard Fitz le Vikere, of Eardisley." No such name occurs in Bishop Swinfield's register as Vicar of Eardisley, but I am afraid it means that this individual was parson of the parish at the time.

Another transaction of the same date is hardly more creditable to those concerned. One of the Eardisley Baskervilles, a boy of sixteen, was presented to the Rectory of Weobley. The laymen who were concerned in such transactions were hardly less culpable than the clergy who were supposed to be benefited. Happily in this case the Bishop of Hereford did his duty, and refused to admit a mere boy to the cure of souls, or to be rector of an important parish. That there should have been unworthy priests in those days, and gross irregularities in regard to livings, was one of the many signs of the times that the Church urgently needed reformation if she was not altogether to fail in her divine mission. It was these things which stirred the great soul of Wycliffe to its depth, and made all good men pray for the cleansing of the House of God.

With regard to the Fitz whom I have mentioned as Vikere of Eardisley, Canon Palmer will direct your attention to a slab in the south aisle of ancient date with a Norman-French inscription, apparently containing the name of Edmund Fitz. The stone has been broken at some time or other, and joined together with the loss of some of the letters. The Edmund of the stone may well have been of the same family as the Richard mentioned in the Rolls.

In the year 1377 there was a dispute as to whether certain lands and tenements in Willersley, Parton, Wybenham, and other places in the lordship of Eardisley belonged to the inheritance of Richard, son and heir of Richard de Baskerville, knight, who held them by knight service under the heirs of Humphrey de Bohun, late Earl of Hereford; or whether they belonged to Sir Richard de la Bere, who claimed them, on what grounds is not stated. A commission was accordingly issued

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to Edmund de Brugge and Gerard Vaughan to inquire into and report upon the ownership, and as to the value of the lands in question. The decision appears to have been in favour of the Baskervilles.

Four years later a Commission was issued to the Sheriff of Hereford and others, to inquire concerning wastes and destruction alleged to have been committed in the King's Castle and lordship of Eardisley by Giles Malory, knight, late farmer of the same, and to return their inquisition into Chancery. The Giles Malory mentioned may have been an ancestor of the celebrated Sir Thomas Malory, the friend and contemporary of Chaucer, and the author, in their modern form, of the Arthurian legends. The result of the Commission I have not been able to trace, but it appears from its tenour that Eardisley was held from the Crown at this time.

Time will not permit me to quote further from the Close and Patent Rolls, which contain much valuable and interesting information respecting our ancient parishes. The taxation records throw much light upon the arbitrary legislation of the times, and may help us to understand the widespread feeling of discontent, when a tenth, or ninth, or a fifteenth, of your sheep and pigs and corn could be demanded on the occasion of the marriage of the King's eldest daughter, or the knighthood of his eldest son. The names of the principal tenants are given in these records, with the amount at which they were assessed.

One local transaction is recorded apparently because the deed relating to it was enrolled in the Courts; to the effect that Richard de Baskerville of Eardisley had lent Robert Walkefare the sum of £1,000 on mortgage of his lands, which sum was duly repaid.

The most interesting incident in the history of the Castle is its connection with Aqua Blanca, the notorious Bishop of Hereford, one of the numerous "undesirable aliens" whom King Henry III., greatly to the offence of the nation, persisted in "dumping" on the English soil. He was born at Aqua Bella, near Chambery, in Savoy, and had been steward to the Queen's uncle. According to our historian Matthew Paris and others, he was all that a bishop, as taught us by St. Paul, ought not to have been. He put his nephews and numerous relations into English livings, and as these persons could not know the language or manners of our people, their appointment naturally gave great offence. The Dean and Chapter of more than one diocese had declined to accept Aqua Blanca as bishop, and his career in the English Church certainly justified their refusal. When the King was hard pressed for money to pay the expenses of undertakings he had entered into without the sanction of the nation, Aqua Blanca advised him to raise funds by a fraud, which the old chronicler describes as "redolent with the fumes of the sulphurous vapour," and which the late Canon Phillott called one of the greatest swindles on record. If history had not drawn unmistakeably the weakness of Henry III.'s character, it would seem incredible that

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such a person should have been allowed to retain his bishopric. But even the King's goodwill and patience were exhausted when he came to Hereford on his Welsh expedition and found no bishop there, or dean, or anyone responsible for the Cathedral services. Accordingly the King wrote a letter to the Bishop, dated at Hereford, 1st June, 1264, in which, after rebuking him sharply for neglect of his spiritual duties, he goes on to say, "Wherefore we command and strictly charge you that all occasions set aside, you endeavour to remove yourselves with all possible speed unto your said church, and there personally to execute the pastoral charge committed unto you in the same. Otherwise we will you to know, for certainty, that if you have not a care to do this we will wholly take into our own hands all the temporal goods, and whatsoever else doth belong to the barony of the said church, which goods for spiritual exercise's sake therein, it is certain our progenitors of a godly devotion have bestowed thereupon."

These proceedings of the Bishop, though they might not justify the lawless action of the barons, will explain in some measure their conduct towards a Bishop who would otherwise have met with courtesy and respect. It appears from the chroniclers that soon after the Bishop's return to Hereford some of the barons, headed by Walter de Baskerville, proceeded to the Cathedral, and, regardless alike of the office of the Bishop and the sanctity of the building, seized the unfortunate man and his nephews, who were canons, from the very "horns of the altar," and conveyed them, with other persons, to Eardisley Castle. Here they were imprisoned, and soon afterwards the Bishop died, his end no doubt hastened by shame and mortification. The beautiful shrine in the Cathedral, which he himself is said to have designed, keeps his name if not his virtues in remembrance. He directed that his heart should be conveyed to the place of his birth.

I remember spending a day in Chambery many years ago, and even now the echo of the sweet mountain music of the goatherds, as they came with their goats into the town, comes back to memory, and I can well understand how the dying Savoyard, having met with such poor success in our rough northern clime, would turn in his dying moments to his beloved mountain home.

The transaction shows that the Baskervilles had ceased to be French or Norman, and like most of the Norman families had by this time blended with the people of Saxon race, and had become thoroughly English in race and sympathy. We are informed that Roger de Baskerville succeeded his father Ralph, who was murdered in Northamptonshire in 1294. At a later time a Sir John Baskerville followed the banner of Henry V. at Agincourt, on which famous field the youthful soldier must have fought against men who belonged to his own ancestral race. He married Elizabeth, daughter of John Touchett, Baron Audley.

Did time permit I would gladly dwell more upon the history of the Baskerville family. It certainly is of ancient descent. Anti-

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quarians derive them from the marriage of a Baskerville with the niece of Gonore, wife of the great grandfather of William the Conqueror, and genealogists connect them with the proud race of Plantagenet, through the marriage of Sir James Baskerville to Katherine, daughter of Sir Walter Devereux, lineally descended from Edward the First. Sir Walter fell on the field of Bosworth, and his son-in-law was created a banneret after the battle of Stoke, fought against the impostor Lambert Simnel in 1487. But the historical interest of the family belongs to an era that passed away on the field of Bosworth; when commerce, literature, geographical discovery, and science were to succeed to the perpetual strife of rival families for the crown. Enough has been said to show how a remote parish may, through the incidents of private life, be connected with the general history of the country. Another descendant of the Eardisley Baskervilles shines as one of the heroes of "the spacious times of Queen Elizabeth," being "Cheife Commander of Her Majesty's forces in Picardie in ye service of the French King." This King was Henry of Navarre, and it was in his wars with the Catholic League that Sir Thomas Baskerville was honourably associated. It was the cause of liberty of thought, the stern watchword of which for the time was "Remember St. Bartholomew." The Elizabethan hero was the last of the family who won fame on the battlefield. Mr. Hutchinson, in his Herefordshire Biographies, has given us the lines engraved on his monument in old St. Paul's which conclude with the opinion—

"That valour should not perish voyde of fame,
Nor noble deeds, but leave a noble name."

Years passed away, and the great struggle began between Charles the First and Parliament in which Sir Humphrey Baskerville supported the Royal cause, and, like many others, suffered for his loyalty in worldly fortune. We learn that "roysters from Hereford, as *Mercurius Civicus* calls them, burnt Sir Robert Welch's house, Eardisley Castle, and other houses in that neighbourhood, but laid aside a similar design against Monnington" (Webb's Civil War). Thus this ancient castle, which had stood for centuries, fell to rise no more. Like its neighbours at Almeley, Lyonshall, and other places, it was no longer needed. As we glide "On the breast of the river of Time," we shall never see again the feudal castle, or the villein, or the knights and squires of old. The peaceful country gentlemen and clergymen who now represent the ancient Baskervilles can never be as their forefathers. Slow but inevitable changes connect the present with the past.

The Sir Humphrey Baskerville above mentioned was the youngest son of Sir James Baskerville, whose will was proved 9th December, 1546. He did not long survive the ruin of his ancestral castle, having died in 1647. From an inscription on brass plates in the family vault at Eardisley, copied many years ago, we gather that the Baskervilles became connected by marriage with the Coningsby family, who built the hospital in Hereford out of the ruins of the old monastery of the Black Friars. The inscription reads :—

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"Sir Humphrey Baskerville married Elizabeth, third daughter of Sir Thomas Coningsby, of Hampton Court. He had sonnes Thomas and Henry, and one daughter, Philippa. Obiit 3rd April, 1647."

John Benhaile Thomas, son of the Thomas Baskerville of this inscription, and grandson of Sir Humphrey Baskerville, was baptised in Almeley Church on the 29th November, 1642, in the midst of stormy times. He is said to have died in poverty in the gatehouse of the castle, the only portion which the flames had spared of his ancestral home.

In the eighteenth century we find the manor in possession of the Barnsley family. A tedious lawsuit, very celebrated at the time, in connection with this family and the Eardisley property, lasted for thirty-five years, as we are reminded by the inscription on the cenotaph, copied by Mr. Harper in his interesting book on "The Marches of Wales." The title of this work reminds us of the days when Eardisley was comprised in that portion of the kingdom in which the King's writ did not run, and in which lawless disorder often reigned supreme. By a Statute passed in the reign of Henry the Eighth, Eardisley and other places on the Welsh border were transferred to the county of Hereford, and ceased to be the haunt of the Llewellyns and Owen Glendowers of old.

The former feudal manor with its quaint rights and obsolete privileges is now the property of Mrs. Perry-Herrick, the mention of whose name in this place will elicit only the response of affectionate respect. Her care for the physical and moral welfare of the Eardisley people is assuredly not less than that of former lords for the villeins and borderers who tilled their lands.

And the change is infinitely for the better. In spite of all that was picturesque and romantic in those stormy days, we may well rejoice that the cultivation of the land, the care of the poor, the humble pursuits of trade, the education of the children, and above all the claims of true religion receive a degree of attention which was impossible in an age when the shrill blast of the clarion and the fierce shouts of men-at-arms were heard from the castle walls, once surrounded by this moat. The school-bell calling the children to the pursuit of learning to qualify them for English citizenship, the sweet chimes of the parish Church summoning the people to the house of prayer may be very prosaic—very modern, but underneath are nobler ideas than men knew of in the past—for

> The time is past when swords subdued—
> Man may die—the soul's renewed.

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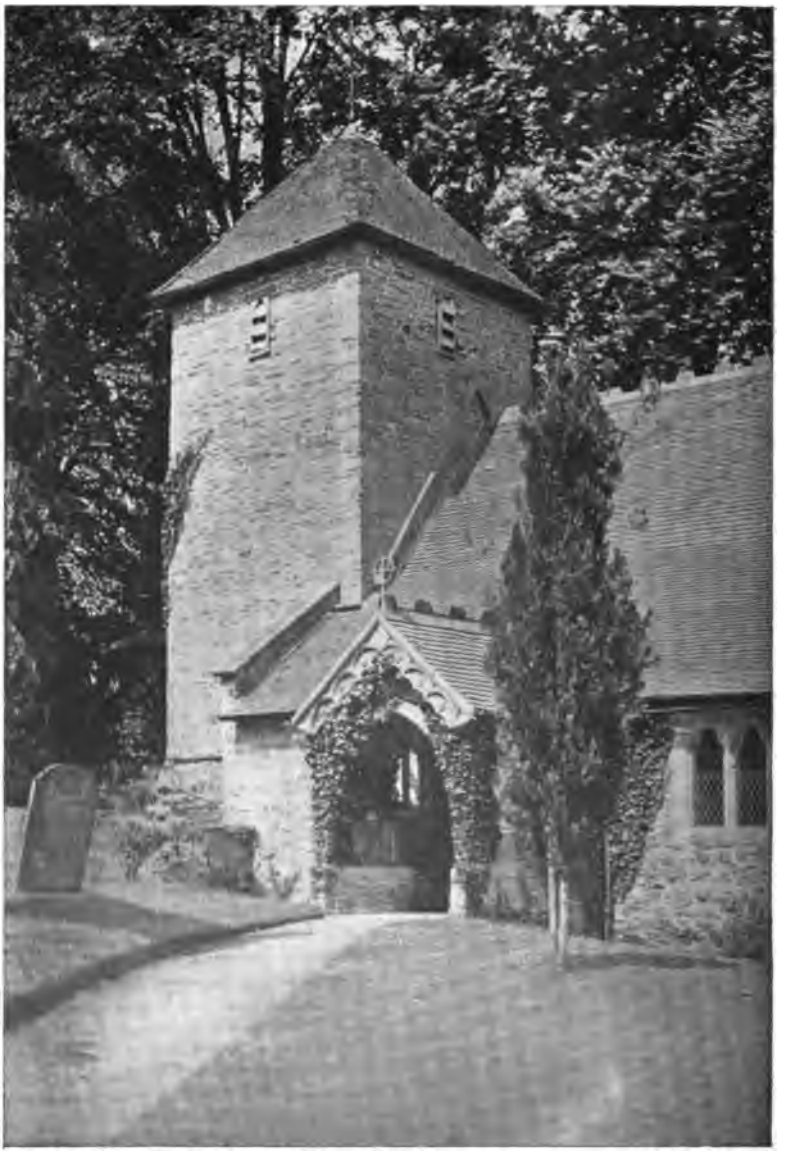

SARNESFIELD CHURCH TOWER.

No. 27. To face page 28, between page 202 and page 263. *Photo. by A. Watkins.*

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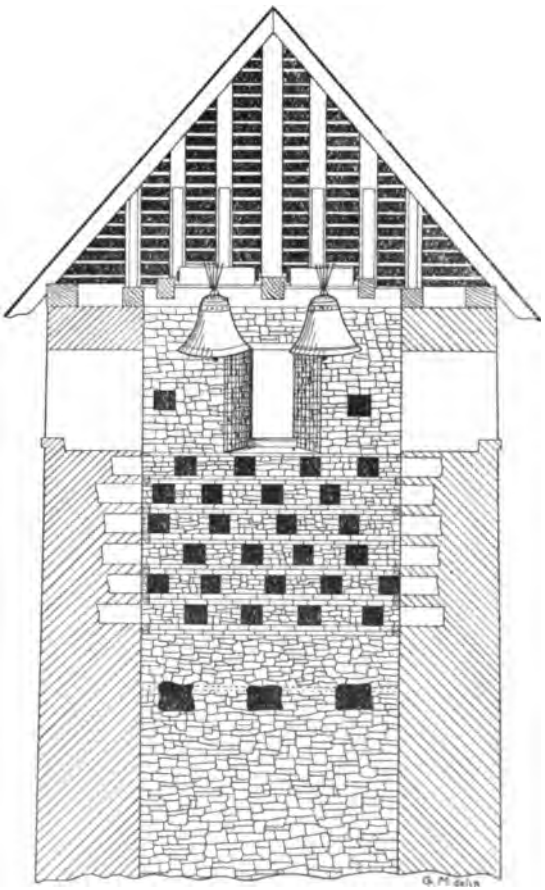

SECTION THROUGH THE UPPER PORTION OF SARNESFIELD CHURCH TOWER, CO. HEREFORD,

Shewing the North wall of the Columbarium, and original site of the two Bells. Scale $\frac{1}{8}$ inch to one foot.

The height of the Tower from the floor to the wall plate is 34 feet.

No. 28. To face No. 27, between pages 262 and 263

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THE DISCOVERY OF A COLUMBARIUM IN THE TOWER OF SARNESFIELD CHURCH, HEREFORDSHIRE.

By George Marshall.

Some months ago, being in the Church Tower at Sarnesfield, my attention was attracted by a number of holes in the wall just below the belfry stage. At first I thought they were only old apertures in which the timbers of an earlier belfry stage had rested, but on looking closer I saw that they were evenly distributed in all four walls, in two tiers, and a further inspection disclosed four more tiers above these, partially hidden by the belfry timbers. On examination they proved to be true pigeon holes of the usual dimensions, viz., 6 inches by 6 inches at the entrance, slightly enlarging inside, and entering the wall at an angle to a depth of 15 to 18 inches. Each tier has four holes, and in a few cases five, in each wall face. In addition to the six tiers, which commence just below the belfry windows, are two holes in each angle about half-way up these windows. There are about 108 nesting holes in all, but it is difficult to determine the exact number, as some of the tiers are broken into by the belfry timbers. Between each tier is an alighting ledge of stone from two to four inches thick.

I think this dovecot may claim to be the earliest example to be found in Herefordshire. The Church is built in the transitional Norman to the Early English style, and must have been erected between 1200 and 1250.

The tower bears every evidence of being coeval with the Church, and of having been erected at one period, including the pigeon holes. The walls are on an average 3 feet thick, and the holes are constructed in the thickness of the wall. The interior of the tower is 8 feet square. The only other instance of a Church Tower being adapted for use as a columbarium, of which I can find any mention, is at Collingbourne Ducis, near Marlborough, where the holes widen towards the back, as is usual. How many nesting holes there are in this instance, or what is the date of the tower, I cannot say.

Some years ago I was informed by the Rector of Overbury, in Worcestershire, that over the chancel, which, if I remember rightly, was groined and of about the 15th century, were nesting holes for 200 pigeons. The pigeons entered by two small windows at the east end, and access was gained from the interior by means of a small door over the chancel arch. In this case no doubt the columbarium belonged to the Rector; but to whom did the right belong of keeping pigeons in a Church Tower? I suggest it must have been the Lord of the Manor, as Rectors and Lords of Manors had a monopoly in pigeons. At Sarnesfield the Lord of the Manor was the person who in all probability found the funds for erecting the Church and Tower, and thus whilst making provision for his heavenly welfare did not forget his earthly requirements.

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ADDITIONAL NOTES ON PIGEON HOUSES.

By Alfred Watkins.

Since I made the survey of Herefordshire Pigeon Houses recorded in the *Transactions* for 1890,* I have found very few additional instances in the county. One still remains at The Hurst Farm, Weobley; a square half-timbered example, four-gabled, with four-gabled lantern; nesting boxes gone.

In 1894 the making of the Bromyard and Leominster railway disclosed the foundations of a circular stone dovecote at Pigeon House Meadow, Instone Bridge, near Bromyard (on the Tenbury road). The walls were 3 feet 9 inches thick, with nest holes to the ground. The railway appears to have passed through its site, so that it is probably now quite demolished. It was described, with a photograph, in the *Bromyard News* about November, 1894, by Mr. E. L. Cave.†

The picturesque square dovecote at The Moor Farm, Hereford, did not survive the nineteenth century. It collapsed from sheer age and decay in October, 1900. An eye witness told me that he chanced to be walking past at the time—a perfectly still evening, about six o'clock—and, hearing a noise, he saw it collapsing in a cloud of dust, only the low stone foundations remaining.

I notice with regret that many dovecotes mentioned in my survey have fallen into a still further condition of decay. On the other hand, one at least—at Barton Court, Colwall—has been renovated.

Mr. George Marshall has recorded in a separate paper his discovery of a Columbarium in Sarnesfield Church tower. I have climbed up amongst the bells to inspect the nest holes, and can confirm the fact that they are true nest holes built at the same time as the tower. Some years ago Mr. Marshall mentioned in a letter to me that in some old records of Sarnesfield a pigeon house was mentioned, but that no traces of it now exist.‡ The possibility of this being the church tower Columbarium now discovered is interesting.

It seems to me that it is very probable that other instances exist which have not been recorded, because those whose occupations take them among the bells are not familiar with the appearance of nesting holes, and regard them as being masonry putlock holes. Besides the two instances of Columbaria in churches mentioned by Mr. Marshall, I have seen mention in the "Amateur Photographer" of one over the chancel at Elkstone (Gloucestershire), and others in the towers of Monks Bretton (Yorkshire), Penmon Glannach (Carmarthen), Gum-

*See the excellent paper, profusely illustrated, by Alfred Watkins, in *Transactions* 1890, pp. 9 to 22.

† It is also described in *Transactions* of the Woolhope Club 1894, with an illustration accompanying. See *Transactions* 1894, page 264.

‡ Except the field in which it stood, still known as "The Pigeon House Meadow." (*G. Marshall.*)

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freston (Pembrokeshire), and Birlingham, near Pershore. But I have no personal knowledge of any of them.

I have had photographs of a good many Pigeon houses in other counties sent to me, and have seen several others in my travels, and it may be well to make here a simple record of them.

Those in Anglesea have been communicated to me by Mr. R. D. Williams, solicitor, Carnarvon. Blackford, Selway (Somerset), circular, domed roof, walls 4 feet 3 inches thick; Rectory, Trevenna (close to Tintagel Castle, Cornwall), circular, domed roof; Shardeloes, Amersham (Bucks), circular; Streatley (Berks), circular, stone, with dormer window; Trewyn (Mon.), octagon, brick, vane, ship in full sail; Llanengrail (Anglesea), square, stone, with stone four gabled lantern; Plas Bodewryd, near Amlwych (Anglesea), square, stone, four gabled. Penmon (Anglesea), circular, stone, domed roof, stone lantern; Tros-y-Marian (Anglesea), square, stone; Manorbier Castle (Pembrokeshire), circular, stone, domed roof; Kirkby (S.W. Lancashire), square, stone, embattled at top, vane, a heron; Thelwell Hall (Cheshire), octagon; Cheam (Surrey), octagon; Kyre Park, Tenbury (Worcester), circular, three dormer windows; Tong (Salop), octagon, brick, in deer park; Cropthorne (Worcester), square, half timber, lately demolished; Wappenbury (Warwick); Cleeve, Worcester, circular.

The following Pigeon houses have been mentioned in the Record column of the "Amateur Photographer":—Wasperton (Warwick), octagon; Abbotts Moreton (Alcester); Embleton (Northumberland); Temple Guiting, Bilbury, circular; Scuthrop (Cotswolds), square; Dunster (Somerset); Kilcooley Abbey (Tipperary), beehive shape.

THE OCCURRENCE OF THE MISTLETOE IN HEREFORDSHIRE UPON THE PLUM AND PEACH.

By Thomas Blashill.

Our *Transactions* for 1864 contain a paper in which Dr. Bull included all the information he could collect as to the different trees upon which the mistletoe was known to grow, but neither the plum nor the peach was among them. In a long list of trees upon which, so far as he was aware, it had never been observed to grow spontaneously, although it had been successfully propagated on several of them, the cultivated cherry and plum trees, and their near allies, the Bird-Cherry (*Prunus Padus*) and the Wild-Cherry (*P. avium*) are included, but it is not said to have been propagated upon these. Dr. Bull quotes from a paper by Dr. Harley (Linnean Society, 1863). a list of the trees which, from the structure of the wood, might be expected to be predisposed to grow mistletoe, and the plum is there named. But it does not appear that it had actually been known to grow mistletoe.

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Under these circumstances I was much interested to hear some three months ago of the occurrence of mistletoe upon a cultivated plum tree in the garden of Mr. Leaper, of Bartestree, and before I could visit it Mr. Watkins, of Pomona Farm, Withington, was good enough to send information confirming the statement from his own experience.

Mr. Watkins has in his plantations different varieties of plum trees, planted alternately with apples, only about two of which have begun to bear mistletoe. But there are six cases of mistletoe upon the plum, each tree being the Pershore, or egg-plum—the same as that at Bartestree. The trees are upon their own roots and the bark is rough, which Mr. Watkins thinks may give good hold for the seeds.

It is even more curious that a bunch of mistletoe is growing upon a standard peach that is trained against a wall. This is grafted upon a Pershore plum stock, the mistletoe being above the graft. The growth of mistletoe on a wall tree upon which seeds could hardly be deposited by birds seemed very remarkable, but Mr. Watkins says that mistletoe was packed for market near to this tree, and small pieces have several times been seen hanging in it.

It is therefore proved, and so far as I know, for the first time, that mistletoe will grow upon the Pershore plum and upon a peach that is grafted upon a Pershore plum, and, if the chance of artificial propagation can be excluded, it seems that it will grow naturally upon a tree upon which berries happen to have been deposited without having passed through the body of a bird, a process which ancient writers seem to have thought to be essential.

There remains the question whether the mistletoe has appeared upon the plum and the peach without artificial help. It has been the practice in this nursery to propagate mistletoe upon a few apple trees, as trees so furnished are sometimes asked for. This has been done from the berry and also by using a graft that already bore a small piece of the parasite. But Mr. Watkins and his late foreman are both quite confident that this cannot have been done on the plum or the peach by them or any one else. He is also quite certain that the tree at Bartestree has never had any connection with his nursery.

This is perhaps as far as the matter can be carried at present. But, as Dr. Bull said in 1864, there is little doubt that the list of trees which the mistletoe occasionally inhabits may be extended by general and more careful observation, and if more cases should be found where the idea of artificial propagation seems excluded, the natural production of the mistletoe on the plum and the peach may become reasonably certain.

Mr. John Riley, of Putley Court, has several egg-plum trees upon which mistletoe has come spontaneously.

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Woolhope Naturalists' Field Club.

SECOND FIELD MEETING, TUESDAY, JUNE 28TH, 1904.

RUINS OF CRASWALL PRIORY—CRASWALL CHURCH.

In its secluded position, begirt by "high uneven places," varying in elevation from one thousand to more than two thousand feet above sea level, known to few save those whose lot it is to live in the neighbourhood. or to the sportsman in quest of grouse over the breezy moorland, Craswall Priory has been regarded in the light of an Ultima Thule in Herefordshire. The site of Craswall *Abbey*, as it is improperly named in the Ordnance Map, has not only been described as difficult of access, but, *horresco referens*, nothing to see when you have got there. Craswall Priory has been approached by members of our Club in their Field Meetings, and many, including the writer, have been deluded into the belief that they had looked down upon its ruins from circumjacent heights. To day, however, our delusions have been exposed. So buried are the ruins at the head of a sequestered vale, upon the fringe of a bosky coombe, under the shade of yew trees of prodigious size and age, and mercilessly overgrown with huge tortuous ivy stems bearing luxuriant foliage, that they are not visible from a distance.

Prompted by the assistance, proffered direction, and inspiration of Mr. C. J. Lilwall, of Llydyadyway, Cusop, a party mustering sixty in number visited the ruins, and inspected some of the long-buried marks of ancient piety which have been recently unearthed by Mr. Lilwall. Once more has Craswall Priory risen from its obscurity.

Let us briefly consider how the ruins can be reached from various starting points.

Craswall can be reached by a cross-country walk of six miles from either Peterchurch or Dorstone Railway Stations on the Golden Valley line. Another method of access is from Pandy Railway Station, whence a good metalled road conducts by Clodock and Longtown, as far as the Bull's Head Inn at Craswall, a total distance of ten miles. Market people journeying to Hay from this direction prefer leaving their wheeled conveyances at or near this inn, and travelling the remainder of their journey of more than six miles to Hay on horseback; the greater part of it being indifferent, tortuous, hilly, suggestive of a switchback, and in many places requiring the signal-post, "dangerous to cyclists."

From the Bull's Head to the site of Craswall Priory, passing Craswall Church on the way, the walk is about two miles.

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We were assured by Mr. Lilwall that the best method of reaching the Priory is from Hay, and such was the route selected for our visit. Leaving Hereford at 9-22, the train, having picked up many Members at intermediate stations, arrived at Hay shortly after 10 a.m.

Upon arrival at Hay we entered Welsh grounds, although the ancient terms "English Hay" and "Welsh Hay" are still in remembrance and usage. "The Hay" is also applied as a distinguishing mark, may be, probably derived from the old Norman French word La Haie, denoting an enclosure. Fragments of the enclosing walls of the old castle are still visible, the remainder, no doubt, having served the purposes of a quarry for many of the existing buildings. Leland thus wrote of Hay in his quaint language and spelling:—"It yet sheweth the token of a right strong waulle, having in it three gates and a postern. The towne within the waulles is wonderfully decaied. The ruine is adscribed to Owene Glindor."

The more modern castle, a Tudor house, said to have been built by Howell Gwyn of Trecastle, and inhabited to the present day, has undergone many interior alterations, but its fine oak Jacobean staircase has been spared. The house was built into the adjacent Norman structure, of which some walls, stairs, and a fine gateway remain.

From *Highways and Byways in South Wales*, by A. G. Bradley, we learn (page 46) that the Norman Bernard de Newmarch annexed Hay in the course of his extensive conquests, and that it was held for a short time by a grantee, Philip Walwyn. William de Braose succeeded to nearly the whole of the Newmarch domain, and he (or, according to local legends, his wife, "Moll Walbee") is credited with the building of the castle, temp. Henry II., 1154 to 1189. In the time of King John Braose's estates were confiscated, but afterwards restored to his son, the Bishop of Hereford, whose brother and successor married a daughter of Llewelyn the Second, or "The Great." Fighting on his father-in law's side against King John, his castle at Hay was plundered. Wearied with incessant strife over this bone of contention on this turbulent borderland, the Welsh themselves destroyed it. During his protracted wars with the Welsh it was rebuilt by Henry III.; shortly after it was seized by Llewelyn, whose tenant was soon dispossessed by Henry's son Prince Edward, to be himself ejected when Llewelyn's grandson, the third and last of that name and race, allied with the Barons, had Henry III. and his son in captivity after the battle of Lewes in 1264.

This Llewelyn III. met with his death near Builth on December 11th, 1282, on a spot commemorated in the village, Cefy-y-bedd Llewelyn, the ridge of Llewelyn's grave.

If we look at a Map of Wales during the period of the Norman Conquest (*Story of the Nations—Wales*, by Owen M. Edwards), we shall find Hay in Brycheniog, between the districts of Elvel in the

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north and Gwent in the south. In the Map of Wales, after the Statute of Rhuddlan in 1284 and the conquest by Edward I., it is in the territory apportioned to Humphrey de Bohun, Earl of Hereford, who died before the end of that century.

Eventually we read of Hay Castle being included amongst the many works of havoc and devastation committed five hundred years ago, defined and conveniently disposed of by chroniclers under the general term, "deflor'd by Glindor."

The programme informed us that Hay was situated on the general elevation of about 300 feet above Ordnance datum. We were forewarned that, if we desired to visit Craswall Church, we must be prepared for a walk of seven miles, including an ascent to an altitude of 1,450 feet, over roads undulating, tortuous, and in some places rough.

The mention of elevations reminds us that we must take this opportunity of correcting an important error which has crept into our volume of *Transactions*, 1899, page 134. In the third paragraph, ten lines from the bottom, we read "the lowest summer-level of the river Wye at Hay was estimated to be 299 feet 3½ inches above Ordnance datum. At Hereford it is computed at 152 feet. This makes a fall of 147 feet 3½ inches in 29 miles, or a little more than 5 feet in one mile." The corrected reading is given in the footnote below.*

The Dulas Brook, which forms the boundary between Herefordshire and Brecknockshire, empties into the Wye at Hay railway station. Under the directorship of Mr. Lilwall a walk through the eastern suburb of Welsh Hay, as it is called, crossing Dulas Brook a second time, thence skirting its right bank, brought our party after a walk of about a mile and a half to the base of the elevated ground upon which the vestiges of the old Cusop Castle are conspicuous close to the Church. For particulars respecting them see *Transactions* 1899, p. 134 seq. 1889, p. 360. A photograph of one of the venerable Yew trees in the churchyard will be found before page 145 of *Transactions*, 1866. A further walk of nearly a mile brought us to a footbridge over the brook, crossing which for the third time, we found ourselves again in Brecknockshire, and, on reaching Llangwathan Farm, halted for its inspection by the permission of Mr. Lindesay.

Llangwathan is an old timbered building whose large hall has been divided into separate apartments to suit the requirements of more modern days. It retains some fine old principals, perfect down to their base, of the 13th or 14th century. Access to the first floor is obtained by a stone staircase under a groined roof worked in narrow laminated courses of masonry. On the authority of Mr. Alfred Watkins, similar stone staircases are not infrequently found in Welsh cottages in this and other districts. A few notes respecting the place were given by Mr. Morgan, of Llanigon.

* The lowest summer-level of the river Wye at Hay is estimated at 237 feet 3 inches. At Wye Bridge, Hereford, it is computed at 152 feet. This makes a fall in the river Wye between Hay and Hereford of 85 feet 3 inches in 29 miles, or close upon 3 feet in one mile.

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Mention was made of Llangwathan in a commission issued in the reign of Charles I., to settle a dispute of manorial rights between the owners of the manors of Haya Anglicana, the manor of Hay, and Haya Wallensis, a manor in the parish of Llanigon, and evidence was taken. A decree, founded on this evidence, was issued, by which it appears that Llangwathan, or as it is called in another place Llangathen, was adjudged to belong to Haya Wallensis. It remains so still, and although it is merely an island in the parish of Hay, it appears in the parish map as belonging to Llanigon. It comprises an area of about 230 acres, including the house and mill, and in the terrier, which was made in 1844, the commuted tithe rent charge is given as payable to the tithe owners of Llanigon, and they are paid to the Rev W. E. T. Morgan now. Mr. Morgan suggests the meaning of the name to be "Gwaddan's house." Gwaiddan appears in the Liber Landavensis as a proper name.

Leaving Llangwathan, on the contour of about 650 feet, a walk over two fields brought us to the now disused Camping ground of the Royal Artillery,* and onwards to the New Forest Farm, on the main road, Hay to Craswall. We calculated the total distance of our walk from the Station at three miles. On the buildings at New Forest is a bench-mark, 845·8 feet.

By the tortuous main road from Hay Railway Station, including amongst other bendings, three turnings at right angles, New Forest is about two miles and three quarters distant. Onwards towards Craswall, after an interval of three-quarters of a mile, another right-angle turning occurs. Half a mile further the course of the Dulas Brook is seen in the valley nearly one hundred feet below; the road, after rising to an altitude of 1,095·7 feet, suddenly dips, and makes an acute angle of about fifty degrees at a bridge which spans the mountain rivulet, the county boundary, bringing us into Herefordshire again, facing a steep ascent up to 1,134·5 feet at the Birches Farm.

Hills, valleys, dingles, and woods form pleasing features over this walk of more than four miles from Hay. On the wooded Cusop Hill to the east is a triangulation survey station, giving the surface elevation of 1,310·1 feet, and on Cefn Hill southwards is another with the height of 1,592·6 feet. The two main sources of Dulas Brook are eastwards from Cefn Hill along the Maerdy Dingle, and southwards from the northerly slopes of the end of the Black Mountain range. Maerdy Farm is on an altitude of 1,139 feet.

Vagar Hill, one mile east of Cefn Hill, rises to the elevation of 1,422 feet. Dorstone railway station lies 3 miles north-east of Vagar Hill. Peterchurch station is 3 miles south-east of Dorstone station. For Dorstone see Herefordshire Sheet XXXI. S.E.; for Peterchurch Sheet XXXVIII. N.W. on the scale of six inches to one mile.

* For account of a previous visit to the Royal Artillery Camping Ground, see *Transactions*, 1889, p. 361.

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CRASWALL PRIORY. VIEW LOOKING WEST "ABBEY FARM" IN THE FOREGROUND.

The ruined Craswall Priory is hidden amongst the trees in the centre of the foreground. In the background is a southerly spur of the Black Mountains called Crib-y-Garth, the comb or "Crest of the hill," locally known as "The Cat's Back."

No. 29. To face page 271. *Photo. by A. Watkins.*

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The weather proved all that could be desired for hill scenery, and the temperature somewhat thirst-generating. Upon a grassy plateau near The Birches Farm, aerated waters and light refreshments, provided by the forethought and hospitality of Mrs. Lilwall, were gratefully accepted, and whilst absorbed in contemplation of the view down the valley, of the handiwork of nature in our surroundings, and the difficulty of access to this place after heavy snowstorms, our attention was diverted to the immediate proximity of a house for the ministration of religious services, called The Birches Church of England Mission Room, which we learnt was built by collections mainly through the instrumentality of Mr. Lilwall, opened in 1898, and that for the last six years services had been conducted by Mr. Lilwall as lay reader, involving upon him a journey to and fro of six to seven miles in all weathers except the most forbidding.

From Birches Farm the road to Craswall, ascending into wilder country, attains its highest altitude at about five miles from Hay on the height of 1,450 feet. The eastern ridge of the Black Mountain range, near a Bench-mark, 2,170 feet, lies about 1½ miles S.W., as the crow flies. Parc-y-Meirch lies upon the right hand (west), and Park Wood upon the left or eastern side. Leaving the road at its highest point, and striking across country through the northerly portion of Park Wood, with the silence of the moorland district broken by the bell-like trill of the curlew, after passing the Pot Well and Abbey Farm, a walk, on the aggregate of about one mile from the main road, brought us to a cluster of trees, upon lower ground, beneath which were concealed the vestiges of the ruins of Craswall Priory.

The Pot Well, also called Holy Well, is a shallow surface-well of crystal-clear running water collected in, and overflowing a circular hollowed and hallowed stone. That it should be considered to be endowed with healing powers goes without saying. The overflow into the head of the valley Cwm-y-Canddo forms a tributary of the Monnow. The higher source of the Monnow is from the eastward slopes of the northern extremity of the Black Mountains.

At an angle of one of the buildings in the farmyard of Abbey Farm, a long mountain-ash pole is stapled into the wall by a horse-shoe, as an omen of good luck and as a charm "to keep away the evil spirits from the horses."

Interspersed over the masonry of the end wall of another out-building facing the mysterious charm, are to be seen many masons' marks, or "bankers' marks" as they are technically called in the trade, and upon the same wall an Early English string-course can be traced.

The first impression upon reaching the ruins of Craswall is the remarkable seclusion of the situation. Hidden by trees, especially massive yews, with weird gnarled roots and boles, the ruins are not seen until you find yourself almost walking over them. Overgrown by

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ivy, grass, thistles, nettles, mosses, lichens, and other vegetation, they have apparently been undisturbed, uncared for, and unnoticed since their roofs fell in, and their walls fell down in all directions inwards and outwards.

"Lo, desolate the seat of ancient piety!
The mould'ring walls, th' unjointed stones, confess
The iron tooth of Time; the half-sunk arch
The weight of 'whelming years.
Reflected from the pure sky-tinctur'd wave,
A sacred solitary scene is formed."

Craswall Priory lies at the head of the valley Cwm-y-Canddo (the fox dingle), in which flows a brooklet, a tributary of the Monnow, which river it enters about a quarter of a mile south of Craswall Church.

Great was the surprise of the writer at the change which had come over the scene since his visit to the ruins two or three weeks previously: the result of Mr. Lilwall's work. The spot for excavation could not have been more happily selected. The bearing of the building exposed to view was found due magnetic east. It measured 104 feet in length by 35 feet in width. The diggings revealed large flagstones, apparently steps leading to the ancient altar. Amongst the finds were exposed masonry of Early English architecture, ribs of groined roofing, a boss for a groined ceiling of nine ribs, coloured plastering, and worked blocks of tufa (travertine), &c.

Around the site of the apsidal east end of the excavated building the congregation assembled to hear the paper prepared by Mr. Lilwall.

CRASWALL PRIORY.

By C. J. Lilwall.

Away in the wilds, nestling in this lovely valley, far from the madding crowd, and surrounded by its park—the everlasting hills—a confused mass of ruins is all that remains of the Priory of Craswall. It was founded by Roger de Lacy in the year 1220, of a family who gave largely to the monastic establishments in this and adjoining counties. The church was dedicated to St. Mary, and three priests and ten monks were settled here. The Priory was subordinate to the Abbey of Grandmont in Normandy, and for more than two hundred years the establishment flourished. Great Lords of Herefordshire enriched it with donations of land, among whom we find such names as Theobald Vernon, Hugh de Kinardesly, Roger de Clifford, Rodbert-de-Eways, and others. These and other donations were confirmed by two English Kings, viz., by Henry III. in the 15th year of his reign, and by Edward III. In the reign of Edward IV., in the year 1462, the crash to the alien Priories came. They had long been a thorn in the side of the

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CRASWALL PRIORY. SHOWING THE STONE ALTAR *in situ* WITH AMBULATORY BEHIND IT.

N.B.—The three trefoil heads discovered amongst the ruins have been placed temporarily (May, 1905) in front of the stone altar.

May, 1905, Photo. by A. Watkins.

No. 30. To face No. 31, between pages 272 and 273.

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CRASWALL PRIORY. APSIDAL EAST END, SHEWING AMBULATORY AND WINDOW SPLAY BEHIND ALTAR; AND, UPON THE SOUTH WALL, THE CREDENCE, DOUBLE PISCINA, AND SEATS FOR PRIEST AND DEACONS.

The three trefoil heads discovered amongst the ruins have been placed temporarily (May, 1905) in front of the stone altar.

No. 31. To face No. 30, between page 272 and 273. *May, 1905, Photo. by A. Watkins.*

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CRASWALL PRIORY. SHOWING THE STONE ALTAR *in situ* WITH AMBULATORY BEHIND IT.

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No. 31. To face No. 30, between page 272 and 273. *May, 1905, Photo. by A. Watkins.*

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CRASWALL PRIORY, SOUTH WALL OF CHANCEL: SHOWING DOORWAY, SEATS FOR SUB-DEACON, DEACON, DOUBLE PISCINA, SEAT FOR PRIEST, AND PORTION OF CREDENCE.

May, 1905. Photo by A. Watkins

No. 32. To face No. 33, between pages 272 and 273.

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CRASWALL PRIORY. NAVE, LOOKING WEST, SHOWING, UPON THE RIGHT, THE LARGE AUMBRY, AND DOORWAY IN THE NORTH WALL OF CHANCEL.

No 33. To face No. 32, between pages 272 and 273. *May, 1905. Photo. by A. Watkins.*

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CRASWALL PRIORY. SOUTH SIDE OF CHANCEL, INTERIOR,

Showing seats for sub-deacon, deacon, double piscina, priest's seat, and credence; also the splay of one of the Lancet windows.

No. 34. To face No. 35, between pages 272 and 273. *Photo. by R. Clarke.*

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CRASWALL PRIORY. INTERIOR OF CHANCEL, LOOKING EAST.

No. 35. To face No. 34, between pages 272 and 273. *Photo. by R. Clarke.*

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CRASWALL PRIORY. INTERIOR OF CHANCEL, LOOKING NORTH, SHEWING THE STONE ALTAR, AND AUMBRY.

No. 36. To face page 273. ***Photo. by R. Clarke.***

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Bishops, extra Diocesan and extra Parochial, they cared neither for the Priest of the Parish nor for the Bishop of the Diocese. These alien Priories were of little real good to the country of their adoption.

The foreign Abbey to which they were subordinate deducted from the rents of their lands a very small amount indeed for their own support, starvation wages almost, and the rest of the revenues of their estates were swept out of the country year by year. No wonder that the Government of those days looked with a jealous eye on such proceedings, and several of our monarchs seized their property for the public use. During the wars of England and France Richard II. sequestrated their property for this purpose. Henry IV. showed them some favour, allowed them to pay their dues to the foreign house to which they belonged in time of peace, but reserved to himself in time of war the sum they paid to their superior. So matters drifted on until the reign of Edward IV., when the alien Priories were confiscated to the Crown.

Edward granted the revenues of Craswall in 1462 to God's House College, Cambridge (now Christ's College), but, strange to say, it does not appear that the grant was ever confirmed. The Priory having thus become vacant, gradually became a ruin, and one may suppose that for many years it became a quarry for the neighbourhood. Farm houses were built with its stones, and the parish roads mended with the same. No loving hand seems to have been spread over its decay, and consequently we find so little remaining, while giant yew trees guard what is left. The fish pond a little way down the valley, fed by one of the tributaries of the Monnow, no doubt supplied the brethren with fish. Stones brought to light lead us to suppose that the church was of the fourteenth century. It was long and narrow; it was not built for the outside public, but for the Brethren only.

The walls of the church are in some places three feet thick, and no doubt in the Norman style. Some excavations have been made within the last few days, which have proved to be of the greatest interest. The original pavement of the Priory Church has been reached and the steps leading to the high altar have been exposed. In the course of digging, handsome bosses and fragments of the ribbing of the vaulted roof have been found. Blocks of travertine have been discovered. Some plaster with bright colouring has been dug up, and portions of columns have been laid bare. The church measures 35 feet wide, and is 104 feet in length.

Craswall Manor.

Craswall Manor is a Manor within the Manor of Ewyas Lacy, of which Lord Abergavenny and Mr. H. R. Trafford are joint lords. I am indebted to Mr. H. Cecil Moore and through him to Mr. John Lloyd, of 15 Chepstow Place, London, for an interesting terrier dated 1578 for 1,000 years, and others dated from 1747 to 1781 on

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lives. Mr. Trafford, writing to Mr. Moore, October 26th, 1903, says that "Some of the leases on lives have fallen in, many however continue to pay chief rents and heriots." The lease for 1,000 years is from Richard Lingen and others of land in Craswall dated 7th December, 20th Queen Elizabeth (1578), to William Apreece Griffith, Yeom. "Heriot. The best beast on the death of any tenant. Rent £1 a year. Custom, one couple of capons at Christmas yearly. To do suit of Court of the Manor of Crasswall. Twenty shillings in the name of Relief after any alienation of premises or of any part thereof." The last lease on this document seems to have been granted by the Lords of the Manor on the 19th of July, 1781.

There is also a copy of an Inventory of all books, goods, ornaments, and utensils, etc., dated September 26th, 1772, belonging respectively to the Churches of Clodock, Longtown, and Llanveino, certified under the hands of Thomas Bowen, Minister, and H. Pine, John Jones, Churchwardens.

Dugdale's Monasticon, Vol. VII., p. 1,035, speaks of the Alien Priory of Cresswall, or Careswall:—"Tanner calls this Priory Cresswell, Carswell, Careswell, or Kessewell. He says: 'On the borders of Breconshire, among the mountains in Ewysland was a Monastery for a Prior and ten Religious of the Order of Grandmount in Normandy, settled here about the latter end of the reign of King John, or the beginning of King Henry III., probably by Walter de Lacy. It was dedicated to the Blessed Virgin Mary. Seized among the alien Priories, and being of the yearly value of forty shillings, it was granted 2 Edward IV. to God's House College, now Christ's College, in Cambridge. Dugdale has preserved three charters granted to the Priory.'"

St. Norbert, or Norbertius, Arch. of Madgebourg, was founder of the Premonstratensian Order. The name was taken from the Valley of Premontre, in the Forest of Coucy. White habit: The Premonstratensian were called in early days White Canons, and had in England 35 houses, according to Tanner. They adopted the rule of St. Austin, white habit. Their manner of living was very austere, but their order is no other than a reformation of Regular Canons, Rules of Augustine. St. Norbert died June 6th, at Madgebourg, eighth year of his episcopal dignity, 53 years of age, and in the year 1134. He was canonized by Gregory 13th in 1582. Pope Urban VIII. in 1643 appointed his festival to be kept June 10th. The saint is usually represented holding a ciborium in his hand.

As an addendum to Mr. Lilwall's notes on Craswall Priory and Craswall Manor, we reproduce the following contribution from Mr. John Lloyd, 15 Chepstow Place, London, W., to the *Hereford Times* of March 26th, 1904:—

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THE MANOR OF CRASWELL OR CRASWALL, IN THE COUNTY OF HEREFORD.

The following paper, the date of which apparently is 1695, gives some interesting particulars of this manor. There seems to have been a dispute between Mr. Smyth and the Lord of Abergavenny as to the boundaries of their respective manors near the river Monnow. Mr. Smyth was the owner of Stoke House, near Tenbury, and a man of large property there. "The College of God" at Cambridge would probably be Emanuel,* or "God with us," though I have never previously seen it so called. Other papers extant as to Craswall Manor I sent some time ago to Mr. Moore, secretary of the Woolhope Club, and I trust some notes as to this interesting corner of your county from his hand will appear in their *Transactions*.

"Gilbert Bird Lessee to Thomas Smyth gen. plte. pro Queren against George Ld. Abergavenny and Wm. Perrott and David Rees alias Prychard, defts.—In Ejectment.

The plte. declares that whereas Thomas Smyth gen. the 1st April Anno 6 of our Sovereigne Lord King William and of our Late queen Mary att Clodock in this County did demise unto the plte. Two messuages 2 Cottages 2 Gardens 50ty acres of Lands 20ty acres of Meadow 40ty acres of pasture and 30ty acres of ffurs and heaths with the appurtenances in the Townshippe of Craswell in the parish of Clodock in the County of Hereford for the Terme of five yeares That by vertue of the said demise the plte. Entred and was thereof possessed untill that the defts. afterwards the 2d of Aprill afforesaid with force and armes into the premisses Entred and did Eject the plte. which he layes to his damage of £20.

The defts. plead not Guilty.

The plts. Title.

The Tenements in question are the Cottadge in possession of the deft. William Perrott and all the Lands in his possession. And the Cottadge in possession of David Rees alias Prychard and all the land in his possession parte whereof was lately in the Tenure of John Rees alias Prychard and the other parte thereof was Lately in the Tenure of Mary Prosser And the said Cottages are Erected upon And the Lands therewith used and in the defts. possession are Incroached out of parte of the wast Lands of the said plts. Lessor within his Manor of Craswell.

That Craswell was a manor formerly belonging to the Priory of Craswell which was a Cell belonging to the Abby of Grandimount in ffrance.

* The College of God's House is recognised as Christ's College, Cambridge.—*Edit.*

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That King Henry the VIth seised into his hands All the prioreys Monastereys Mannors and Lands belonging to fforreigne Abbeyes And by his Graunt made by Authority of Parliament in the 20th yeare of his reigne Graunted inter alia the priory of Craswell to the Colledge of Gods house in Cambridge.

The Colledge the ffourth day of May Anno tercio Eliz. Sold it to Thomas Havard by the name of the mannor of Craswell. Thomas Havard Settled it to ffrances Blunt Blunt sold it to Humphrey Hare who had yssue Gilbert Hare and Anne Hare. Gilbert Hare Entred and had yssue who dyed without yssue whereupon the Inheritance descended to Anne Hare.

Anne Hare married to John Smyth who had yssue Thomas Smyth the Lessor of the plte.

That this is a mannor will Appeare by the Deed from the Colledge to Havard and by the Court Rolls of the Court Leets and Courts Barrons there kept in the time of King Henry 7th by the Stewards of the Colledge and in every Kings reigne ever since to the present time.

BOUNDES OF THE WAST.

The Tenements in question are parte of the wast within the said Lordshippe of Craswall that Lyes on the southside of the river Monow And are Cottages and Lands erected and incroached upon the same wast. This Comon or wast mears on the East End to the wast Lands of the Lord of Abergavenny in the Lordshippe of Ewyaslacy called old fforest. And on the west End of the Borders of Talgarth in the County of Brecon. And on the North side it Adjoynes to the Inclosed Lands and Antient Tenements of the Tenants of Craswall along the side of the River Monow. And on the South side and South west side to Olchen which is parte of the Lordshippe of Sir John Williams called Ewyaslacy and thence to the Borders of Talgarth afforesaid.

The meares Between the Lord of Abergavenneyes wast Lands in the Lordshippe of Ewyaslacy. And the Lord of the Mannor of Craswalls wast Lands in question are from the river Monow To the meares Called Cerrig Lloyd on and thence to a meare stone Called Carrege Wenn And thence to a place on the Toppe of the Hill there Called Crippy Garth. That all those meares are in sight from one another being upon the side of an Hill and is about halfe a quarter of a mile from the top to the bottom att the river of Monow.

The wasts in both these Lordshippes were for many yeares Last Incroached by Cottagers And both Lords were deprived of a Benefitt from by the Tenants breakeing it open.

Most of the Cottagers within the Lordshippe of Craswall except those in question were Erected by Ancient tennants or widdow or children of Tennants to the Lords of Craswall for the time being and suffered soe to doe out of Charity.

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The Lord of the Mannor of Craswall to make out his title will produce a Coppy of the patent from King Henry the Sixth to the Colledge. And the deed from the Colledge to Havard and the possession of his Ancestors And diverse Antient and late presentments wherein the Meares are presented And that the Cottages and Land in question are within the meares and boundaryes of the Lordshippe of Craswall. And that the Lord of the Mannor of Craswall and his Tennants had Alwaies the profitts of the wast in Question by digging the Quaryes burneing of Lime Cutting of Turfe and Graseing the same And that a ffee ffarme rent hath been time out of minde payd to him for parte thereof And that the Cottagers have payed amerciaments for their Cottages And that all or most part of them are Tenants to the Lord of Craswall for the same And pay him an yearely rent for their severall Cottages and Incroachments and that all of them have done suit at his Courts for the same Mannor And that the defts. Perrott and Prychard have with the rest of their fellow Jurors presented the Cottages in question Inter alia to be the Lordshippe of Craswall.

The release from the Colledge to Havard is an Ancient Deed as are alsoe severall of the Court Rolls and presentments.—Pray that they may be read.

To prove the Coppy of the Graunt from King Henry the 6th to the Colledge.—David Price.

To prove the meares between the Lordshippe of Craswall and the Lordshippe of Ewyaslacy for 46 years agoe and that the witnesse his father Walter Davies was Bayliffe of Craswall for 20ti yeares Together and died about 20ti yeares ago That about 30ty yeares agoe the Lordshippe was surveyed and presentment made of the meares thereof And that the meares between Craswall Lordshippe and Ewyaslacy did Extend from Monow to Kerrigg Lloyd on and thence to the mear stone called Carregg Wenn and thence to Cryppy Gath and that the Cottages in question are upon that part of the wast that Lyes in the Mannor of Craswall that he lived there with his father for about 22 yeares together and removed thence about 25 yeares agoe and that when he Lived there the Tennants of Craswall had the profitts of the wast in question without Interupcion and digged quarreys and did rayse stones and Cutte Turfe upon the same And that then there were few Cottages And those for the most parte were raysed by Tenants and widdows and Children of Antiente Tenants of the former Lords of Craswall and suffered so to doe out of Charity call.—Thomas Davies."

Note.—The Order of Grandmont was instituted at Grandmont in Limosin in France about the year 1076 by Stephen, a gentleman of Auvergne. The monks of it lived under the rule of St. Benedict, with some little variation. They were brought into England in the reign of King Henry the first, and seated at Abberbury in Shropshire. Besides which, it doth not appear that there were more than two other houses of this order in England, viz., Cressewell in Herefordshire, and Grosmont's or Eskedale in Yorkshire.—Burn's Eccl. Law, Vol. 2, p. 453.

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To resume our account of the proceedings of this day.

On the slope of the hill half a mile south-east of Craswall Priory is situated White Oak Farm; so called from a white-leaved oak tree growing upon its grounds. A few of the Members visited the farm, and gave the information that the leaves were generally green on the lower branches, whilst from half-way upwards thick clusters of variegated and of white leaves were conspicuous. The tree is said to be in leaf in the Christmas season. The subject of this white-leaved oak was further discussed after luncheon.

Quitting Craswall Priory, the very essence of rural peace in the present day, a haven of refuge in earlier days, too remote to be disturbed during the various successive series of the Welsh wars, *secure from the devastations of the ubiquitous Owen Glendower and his followers, the main party proceeded further southwards. Some earthen embankments passed *en route* indicate the site of the old fishponds of the Priory. A walk of rather more than one mile brought the party to the Church.

Craswall Church is a plain rectangular building with a belfry and one bell at its west end. In the southern part of the churchyard is a basement which probably once supported a cross. A very unusual feature is a masonry seat running externally along the east wall, and a large portion of the south wall. Two windows in the south wall have been restored with masonry from Alveley, near Bridgnorth, in the restorations recently carried out. In the northern churchyard is an excavated and levelled area where, within the last century, "a main of cocks fought after divine service." There are no windows in the north wall, but from the presence of two large flagstones built into it, it is evident that this same Cockpit served the purpose of a Fives-court. We must remember that fives-playing, and also dancing—not over the graves—prevailed at the commencement of the last century, in many churchyards in Wales; we are not surprised at these customs being retained in this out-of-the-way corner of Herefordshire.

Some of the Members will recall to mind the small window in the Church Tower of Aberedw being filled up to prevent the loss of the Fives ball.—*Transactions*, 1891, page 174.

That these ancient customs should have been so long retained need occasion no surprise when we contemplate the conservative temperament by instinct of the Welsh, exemplified in their legendary lore, mystic bardic ritual, Eistedfodd functions, women's tall hats worn by some veterans within the last decade, and old pedigrees, of which the writer has seen one in the town of Hay which traced back through Fitz Hamon the Norman unto Ham the son of Noah. See *Transactions*, 1889, page 362.

* About one mile south of New Forest Farm, on the road thence to the Hay Bluff, is some rough ground called Twyn-y-beddau, or the "mound of the graves." On excavation of this mound, amongst other things, a cannon ball, and large flints, as formerly used in guns, were discovered, possibly relics from a battlefield, temp. Edward III.—See *Transactions* 1898, page 37.

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Two hundred years ago Defoe wrote that "many popish customs" lingered, such as playing football between the services on Sunday, &c. We read also of their aversion to Puritanism in the time of the Stuarts, and of the survivals of popery lingering longer amongst the Welsh Mountains than elsewhere.*

The long-lived institution of the "Court of the Marches" introduced by Edward IV., carried on its powerful sway under the Lordship Marcher system, until swept away by an Act of Parliament 1535, Henry VIII. The counties of Denbigh, Montgomery, Monmouth, Glamorgan, Brecon, and Radnor, formed out of their fragments, pushed the boundary further westwards, by tacking portions of territory formerly under the sway of the Lords Marches on to the counties of Hereford and Salop.

Two hundred years later, in 1735, came the Methodist revival. "The Welsh Methodist, it is true, did not formally leave the Church until 1811, but by that time Calvinism had thoroughly taken hold of the country, and the Establishment had not only made no spiritual efforts to stem the tide, but was rapidly losing even its social influence, as the upper classes were ceasing to take service in its ranks."†

In the present day Craswall, with a population of 225, possesses the following :—A Church of England Church; The Birches Church of England Mission Room; and two Chapels of the Primitive Methodists.

CRASWALL CHURCH.

By C. J. Lilwall.

Craswall Church, dedicated to St. Mary, was built, no doubt by the Craswall monks, at one end of the parish and not far from the Priory. Craswall Church has something of interest for us to-day. It is long and narrow, no distinction between nave and chancel. The holy water stoup in the ancient porch still remains. The 14th century window in the chancel is interesting, and tradition has it that the window was removed from the Priory Church and put in here.

In the Churchyard the ancient stone seats along the south wall of the Church and at the chancel end are curious. It may be that in "the good old days" the congregations were at times so large that the Church would not hold them, and the people were accommodated in this way, while listening to the eloquence of some monk from the neighbouring Priory, who would stand no doubt on the basement steps of the fine old Preaching Cross, or what remains of it, for the stone shaft of the cross is missing.

What is said to be a Cock-pit, or perhaps a Fives-court, is on the north side of the Church. The Chancel only of the Church is now used

* *Owen Glendwr*, by A. G. Bradley; page 322.
† *Ibid*, page 328.

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for service. This was restored some years ago by the Rev. F. R. Green, while two new windows have been placed in the south wall by Mr. Guy Trafford. Winforton Church, across the Wye, seems to have belonged to the monks of Craswall, who had the rights of ferriage across the river.

I have to thank Mr. John Lloyd and Mr. Moore for an interesting inventory of all the books, goods, ornaments, and utensils, &c., belonging to the parish Church of Clodock and chapels within the said parish, within the county of Hereford, and diocese of St. David's, made the twenty-sixth day of September, 1772.

The inventory includes the parish church of Clodock and the chapels of Longtown and Llanveino, but mention is not made of St Mary's, Craswall.

Up to this hour, 2-30 p.m., the programme of the day had been punctually adhered to.

The higher elevations of the Black Mountain range were visible on our west. The temptation to ascend them could not be resisted by some of our party, although at the expense of adding to the day's programme an ascent of another thousand feet in the distance of a mile and a half.

The northern extremity of the Black Mountain range ends abruptly in a steep bluff, familiar to us under the title of the Hay Bluff. This bluff extends for half a mile from east to west. On Sheet XXXVII. N.W. the altitude of 2,007 feet is given in Herefordshire at the north-east angle; near the north-west angle in Brecknockshire is a triangulation survey station of 2,219 feet. Southwards the watershed of this range forms the boundary line between the two counties. A walk of a mile and a half southwards, Sheet XXXVII. S.W., conducts to the highest contour, one mile in length and a quarter of a mile in greatest width, of 2,250 feet (see Sheet 214, on the scale of one inch to the mile). The highest point within this contour is 2,306 feet, which is the highest ground in Herefordshire.

The heights in this locality of Herefordshire will be found on reference to *Transactions*, 1897, pp. 270, *et seq.* See also *antea*, 1903, pp. 146, 147.

The general trend of the various ranges on this south-west boundary of Herefordshire is conspicuously in a N.N.W. to S.S.E. direction, with intervening valleys, amongst which the most important depression is that in which flows the river Dwr, or Dore, in what has been interpreted, or misinterpreted, the Golden Valley.

Westwards the successive depressions are: That in which flows the Escley Brook, between Vagar Hill and Cefn Hill; another occupied by one of the higher tributary branches of the river Monnow, upon its left

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bank, flowing down the Cwm-y-canddo (the fox dingle), at the head of which valley is situated the ruined Craswall Priory; about two miles further south-westwards is the higher source of the Monnow, draining the north-eastern flank from the Herefordshire watershed of the Black Mountains.

One more depression on the eastern side of the Black Mountains remains to be mentioned, namely, the Olchon Dingle, in which flows the rapid short stream the Olchon Brook, rising at the elevation of about 2,080 feet, and feeding the river Monnow upon its right bank between Longtown and Clodock, at a spot half a mile south of where the Escley Brook joins the Monnow upon its left bank.

The western flank of the Black Mountains is drained by the Honddu, a tributary of the Monnow, and by the Grwyne-fawr, a tributary of the river Usk. These ranges maintain the same parallels in a N.N.W. to S.S.E. direction.

DULAS BROOK.

The source of the river Dulas commences with the drainage of the north-eastern flank of the Black Mountains. West of The Birches Farm the highest spring is near a bench-mark of 1,629 feet.

The boundary between Herefordshire and Brecknockshire, prolonged from the extremity of the Black Mountains, is continued along the streamlet formed from this drainage. About half a mile below the Birches Farm, the brooklet meets a tributary, its main feeder, along the Maerdy Dingle, conveying the drainage of the north-western flank of Cefn Hill.

Flowing through Cusop Dingle the Dulas Brook continues the county boundary until its fall into the Wye near Hay railway station.

The abrupt northern extremities of the various parallel ranges, occupying a vast area of uncompromising solitude in its chaos of moorland and mountain, form a striking feature in the physiography of this district. The extension northwards of high ground, drained by the Usk upon the western flanks, apparently acts as a buffer against the encroachments of the Wye, here forced into a general north-easterly course, after flowing for several miles in a southerly direction through the beautiful gorge from Rhayader, past Builth and Aberedw, to Boughrood, thence deflected northwards in strange meanderings past Hay and Bredwardine, to justify its appropriate ancient name of Vaga (wandering).

The geology of the westerly heights is of the Old Red Sandstone formation with the exception of a capping of Carboniferous Limestone on Pen-cerig-calch.

The change into the Upper Silurian formation is conspicuous as you travel by rail along the banks of the Wye upwards a few miles after leaving Three Cocks Junction.

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Drifts from the upper reaches of the Wye are conspicuous near Bredwardine, continued at intervals along the Wye valley above and below Hereford. A deposit of boulder clay underlies in places the fifty feet depth of gravel drift close to the railway line at Stretton Sugwas, three miles from Hereford.

It has often been pointed out that the City of Hereford stands upon a large area of gravel, in which have been occasionally found Silurian specimens transferred from the upper reaches of the Wye.*

At 4-30 p.m. the party, the stragglers coming in at intervals, sat down to luncheon at the Crown Hotel, Hay.

After luncheon the official business of the Club was transacted. Time did not permit the reading by Rev. W. E. T. Morgan of the paper he had prepared on "Place-names of the neighbourhood of Hay." It was reserved for publication.

THE WHITE-LEAVED OAK AT WHITEOAK FARM, CRASWALL.

Mr. Moore handed round for inspection some pressed specimens of White-leaved Oak at Craswall, and of other varieties of oak (*Quercus*), including Q. cerris (Turkey Oak), and a rare specimen from Mr. H. J. Marshall, of Gayton Hall, near Ross, concerning which Mr. Marshall sends notes under the heading of

A RARE SPECIMEN OF OAK TREE.

"The notes I can give with regard to the oak tree, which Mr. Ley saw on my lawn at Gayton Hall, are but scant. He was struck by its peculiar appearance, and (I believe) sent a branch up to Kew for identification, without success. It is 70ft. high, and girths 10ft. 6in. at 18in. from the ground, has a flower like the Turkey oak, and an acorn like that of the Quercus Ilex, or Holm oak, and as small. It is an evergreen, but sheds its leaves nearly (if not quite) all the year round. Like the Q. Ilex its main crop of new leaves comes about the end of May. Owing to its proximity to the house, its habit of constantly shedding its leaves has led to its being severely pruned [as shown in accompanying sketch.] Its chief peculiarity in growth lies in the way in which its laterals are produced, as if socketted in a protruded collar, and apparently at the expense of the main stem, which is flattened by the effort of production. The tree for this reason is devoid of merit as a timber producer, and has nothing in the way of beauty to recommend it. As there are 110 varieties of oak recorded in Johnson's Gardening Directory, it is probable that further research might be successful in identifying this particular oak; but it seems to me that it is a cross between the Turkey and Holm oak. I enclose branch and flower of

* Hereford stands upon gravel, an area of 900 acres, reaching 33 feet in depth at the end of West Street, according to the late Mr. T. Curley, C.E., F.G.S.

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the tree in question and of two Turkey oaks, as well as one with acorn, of what, I believe, to be an ordinary Q. Ilex. I am unable to find acorns of the other trees. I also enclose rough sketch of the bole of the un-named tree."

Mr. Moore said he had sent a specimen of the Whiteleaved Oak at Craswall to Rev. Augustin Ley, who believed it to be identical (except for its particoloured leaves, which he looked upon as a mere sport) with an oak which Mr. Marshall has on his lawn, which has just the same semi-deciduous habit. He considered it a hybrid of Q. Robur and Q. Ilex.

Mr. Moore had also sent a specimen to Kingsacre Nurseries, Hereford. They called it Quercus cerris variegata, and are prepared to supply similar trees to any applicant.

Mr. Moore further remarked that in Loudon's "Trees and Shrubs of Great Britain," 1875, an abridgement of his "Arboretum et Fruticetum Britannicum," there are given 338 varieties of Quercus, 60 varieties of Q. Ilex (the Holm, or Holly Oak), 16 varieties of Q. cerris (or Turkey oak), 12 varieties and subvarieties of Q. robur. In fact on page 851, line 13, we read "the varieties of British oaks which might be selected from extensive woods of that tree are without end."

The majority of our oak trees are imported. Of natives of Europe the Quercus Robur is the British Oak.

With regard to the variety at Whiteoak Farm, it has undoubtedly maintained its variegated condition of leaf persistently—not only occasionally as a freak, or due to blight—seeing that the farm has for a long period been known under the name of The Whiteoak Farm.

The unusual peculiarity about the White-leaved oak at Craswall is its leafing in the Christmas season. Few of us may have seen such a rarity. The incredulous pedagogue (if there be one amongst us) is advised to visit Whiteoak Farm, and send us his report.

In "The Forest Trees of Britain," by Rev. C. A. Johns, London, S.P.C.K. edition of 1847, page 27, we read that the doubting Gilpin, when informed of the Cadenham Oak in the New Forest, Hampshire, budding every year in winter, verified the fact in finding, on visiting it on 5th January, 1782, "the leaves fairly expanded and about one inch in length."

The President said his father, the late Rev. T. Hutchinson, saw an oak at Clyro, Radnorshire, on Mr. Baskerville's estate, which was in the habit of being in full leaf at Christmas. This was in the year 1860. He communicated with Prof. Charles Babington, the well-known authority at Cambridge, and the latter replied: "I have never heard of an oak such as you mention, nor do I believe it is possible to account for such a variation from the usual habit of the tree. It is a curious

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fact, and I propose to mention it on your authority in the *Gardener's Chronicle.* I shall not at all expect such a habit to be continued by seed."

The same gentleman, writing to his father from St. John's College, Cambridge, in 1855, also said: "I am very much obliged to you for so kindly informing me of the discovery of the *Scleranthus perennis* at Stanner Rock, and also for the specimen of the plant. I possess a specimen gathered there in 1853 by my friend Mr. R. M. Lingwood. It is interesting to find the plant at so distant a spot from the East coast of England. The form of *Plantago media* I have often seen."

Mr. Watkins said in 1865 he heard of a white leaved oak near Tarrington Court which leafed at Christmas.

THE WILD BIRDS' PROTECTION ACT.

The President called the attention of the members to the fact that the Wild Birds Protection Act was now adopted in Herefordshire. Copies of this Act may be obtained, one penny each, from the Government printers—Eyre and Spottiswoode—East Harding Street, Fleet Street.

At 6-35 the party left Hay by the train for Hereford.

The Ordnance Maps for this district are: On the scale of 1 inch to the mile. For Hay, Sheet 197; for Craswall Priory, Sheet 214.

On the scale of 6 inches to 1 mile. For Hay—Herefordshire, Sheet 30, S.E. For Cusop dingle and Cusop Hill, Sheet 31, S.W. For Craswall Priory and Church, Sheet 37, N.W.

Here follows a list, as well as could be ascertained, of the party, sixty in number:—The President, (Mr. T. Hutchinson); Revs. C. B. Caldicott, W. S. Clark, Sir George H. Cornewall, Bart., H. M. Evill, H. E. Grindley, R. Harington, E. Harris D.D., E. J. Holloway, A. W. Horton, A. G. Jones, Preb. Wm. H. Lambert, C. Lighton, H. B. D. Marshall, C. A. Money-Kyrle, R. T. A. Money-Kyrle, W. E. T. Morgan, A. Pope, T. Prosser Powell, and C. A. Treherne; Drs. Scudamore Powell and J. H. Wood; Messrs. E. Ballard, F. J. Boulton, G. M. Brierley, J. U. Caldicott, R. Clarke, Truman J. Cook, H. Easton, E. A. Gowring, H. T. Hereford, J. J. Jackson, E. H. Jones, C. J. Lilwall, J. W. Lloyd, W. Pilley, J. Probert, A. M. Purchas, A. P. Small, J. P. Sugden, Alfred Watkins, with H. Cecil Moore, honorary secretary, and James B. Pilley, assistant secretary.

VISITORS: Rev. Jeffreys de Winton, Rev. H. Ellwood (Jarrow-on-Tyne), Messrs. A. G. Bradley (Northampton), J. H. Evans, G. Hertsley (London), F. K. Horton, W. E. Leech (Argentina), J. H. Maddey, E. Tunnard Moore, C. Portman, W. Pritchard, A. Simpson, R. A. Swayne, A. R. Treherne (R.N.), and W. H. Woodcock.

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PLACE NAMES OF THE NEIGHBOURHOOD OF HAY.

By Rev. W. E. T. Morgan, Vicar of Llanigon.

There seems to have been a very early dispute between the Dioceses of St. David's and Llandaff as to the debatable border land called Ystradyw (now the hundred of Crickhowell) and Ewyas, which skirted the base of the Black Mountains on the Herefordshire side, and in which Craswall lies. The earliest notice of the dispute (I am quoting from the Diocesan History of St. David's, by Archdeacon Bevan) occurs A.D. 958 or 959, when the matter is said to have been entrusted to the arbitration of Eadgar, King of England. The authority for this seems to be Liber Landavensis. It assumed its acute phase after the conquest of Breconshire by Bernard Newmarch, A.D. 1100. The dispute was settled in the time of Bernard, the first Norman Bishop of St. David's, in favour of that See. Ystradyw and Ewyas, according to Archdeacon Bevan, are called "the two sleeves of Archenfield." There is also mention of Ystradyw and Ewyas in Jones's History of Breconshire, p. 4, where they are called "the two sleeves of Gwent uch Coed." It proceeds: "When Edgar was King in England, and Hywel Dda, the son of Cadell, was Prince of South Wales, which was one of the three kingdoms into which that country was divided, Morgan Hên reigned in peace over all Morganwg, until Hywel Dda endeavoured to deprive him of Ystradyw and Ewyas." There was also a dispute between the Bishop of St. David's and Hereford over Ewyas during the Reign of Gilbert, Bishop of Hereford, about the middle of the 12th century, and somewhat later in the Pontificate of Pope Gregory IX., A.D. 1236. In the year 1852 an arrangement was made by which the following parishes were transferred from the Diocese of S. David's to the Diocese of Hereford: Michaelchurch Eskley, St. Margaret's, Clodock with Craswall, Llanveynoe, Longtown, Newton, Rowlstone with Llancillo, Ewyas Harold, Dulas, Walterstone; while three benefices within the county of Monmouth were transferred to the Diocese of Llandaff in 1844, viz.: Oldcastle, Cwmyoy, with Llanthony.

And now I come to the names of places.

Llydyadyway—from Llydiart y waun.—The gate of the meadow.

Dulas.—From Du, black or dark, and glas—blue. Query?—Is not Douglas the same word?

Mouse Castle.—It is supposed that its original name was Llygad, an eye, the look out, watch tower. Then it was mistaken for llygod, mice, hence Mouse Castle. There is said to be a similar corruption in the name of the Golden Valley, which is supposed to take its name from Abbey dwr, the Abbey by the water, which the Normans mistook for Abbey d'or, the Abbey of Gold.

Tylausope.—Here is a word with a typical difficulty. One is inclined to derive it from the Welsh. The initial part would evidently be

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tyle, the steep, the hill; but what of the rest of the word? There is a word sob, a tuft, a truss, but that is not satisfactory, and so we have to seek another derivation. May it not be "Tully?" There is a Thomas Tully buried in my churchyard, who has this curious inscription on his tombstone: "This tomb was erected by a few friends as a token of their respect for him, both as a neighbour and a breeder of Herefordshire cattle," and "hope," the same termination as "op" in Cusop (Halliwell gives "hope"* as a valley, and also a hill). Tully's hope.

Tycoch.—The red house.

Pontshingel.—Pont, a bridge, and sigyl, to shake.

Merdy.—The mayor or bailiff's house, the dairy house.

Cwmbucknal.—Bucknall's dingle. There is a Bucknell in Shropshire. Or a corruption of Cwm-bwch-ganol, middle goats dale.

Pentrehiggin.—Pentre, a village, a hamlet, and Eigion, or Eigen, the saint to whom church is dedicated.

Wernddu.—The black marshy meadow.

Llanoleu.—Either the lightsome place, or the light bank.

Pentwyn.—The top of the eminence.

Caerau.—The entrenchments, the fortified place.

Tyuchaf.—Upper house.

Caepound.—The pond or pound field.

Chwarelddu.—The black quarry.

Neuadd.—A hall.

Danycapel.—Below the chapel—just below Capel-y-tair-ywen—the chapel of the three yew trees.

Twyn-y-beddau.—The mound of the graves.

Caerbwla.—The bull's field.

Caetomkins.—Tomkin's field.

Cwm.—The dingle.

Cwm y Canddo.—The fox dingle.

Runisford.—Runis may come from yr ynys, the field in the marshy land, or at the bank of a river. Or; "The ford over the water-course."

Parc-y-meirch.—The park of the horses.

Penybegwn.—The top of the beacon.

Tybwbach.—The scarecrow, or ghost house.

Trelan.—The high abode.

Wernwen.—The white marshy meadow.

Cwmsteppes.—May it mean the dingle of the steps?

Llanover.—I have seen this derived from Llan, the bank of, and Gover, a stream. Doubtful.

Llandraw.—The distant spot.

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* Hope.—Flavell Edmunds in his "Names of Places" gives "Hope, *B.* corrupted from *hwfa*, a sloping place between hills. Frequent in the Welsh Marches and in Derbyshire. When it occurs as a suffix, as in Bacup, Burrup, &c., it is often corrupted into *up*. Ex.: Hope-say (Salop), the slope belonging to the Norman family of Say. Long-hope (Gloucestershire), the long slope."

We have also near Hereford the parish of Fownhope, and, adjoining it, the parish rejoicing in the well-known name of Woolhope. Hope, "a long, somewhat narrow, valley, *without lateral branches.*"

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Pencae.—The top of the field.

Yatt.—A gate.

Gwrlodyfain.—Gwrlodd means a meadow, and fain, narrow—the narrow meadow.

Coycae.—Coed cae, the wooded field. Or; "The enclosure of the trees."

Trefadoc.—Madoc's abode.

Llangain.—The beautiful spot.

Werngwinau.—The brown meadow.

Beili'r Arth.—The court of the fold.

Drain.—The thorns.

Nant y bar.—The brook of affliction. Bar is also a bare-topped hill.

Mynydd brith.—The motley hill.

Llan y wiper.—The adder's abode.

Creigiau.—The rocks.

Blaenau.—The sources, fountain heads.

Pen-y-mynydd.—The top of the mountain.

Llan y coed.—The place of the trees.

Bwlch.—The gap—pass.

Cockylofty.—I have found it most difficult to find any solution of this strangely corrupted name. A friend the other day suggested cocin, the same as cock in haycock, and the root lloffa—to glean—the stack of gleaned corn. Of course gleaning was common up to a recent date. He also mentioned a fact which I was not aware of, viz., that formerly people used to come out of Cardiganshire to gather the wool which the sheep had shed among the gorse bushes, etc., of our hills, and take it home for weaving. This would be lloffiion. Stormonth gives Cock-loft as the room over the garret—the room next the roof.*

Fowmine.—If Welsh, it might come from faw, radiant, honourable, and maen, a stone (?).

Twmpa.—Twmpath, a tump, a knob.

* Coeg-lloft-ty—"Cockloft house."—JAMES G. WOOD.

ADDENDUM.—EARDISLEY CASTLE.

The following note was received too late for insertion in the paper on Eardisley Castle.

BISHOP AQUABLANCA.—It should be mentioned to the credit of a Bishop whose character does not stand high in the history of the English episcopate that he bequeathed a considerable sum of money to be expended in bread for the benefit of the poor of Hereford. This is now given weekly, partly in bread, and partly in money, to a large number of poor persons. The bequest and the present mode of carrying it out further illustrates the continuity of civil life in this country.—R. H. W.

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Woolhope Naturalists' Field Club.

THIRD FIELD MEETING (LADIES' DAY), THURSDAY, JULY 21ST, 1904.

TINTERN ABBEY.

Despite such powerful counter-attractions as the opening by the King of the Birmingham Water Supply from Wales, and a Herefordshire Bow Meeting, on Thursday, 21st July, there was a large attendance of ladies and gentlemen at this Field Meeting at Tintern Abbey.

Owing to a special train service to Tintern, conceded by the Great Western Railway authorities, the usual delay of one hour at Monmouth was avoided. Leaving Hereford at 9-50, Tintern was reached at about 11-40. By another special train, leaving Tintern at 1-45, Chepstow was reached at 2 o'clock. The return train, leaving Chepstow at 5-21, brought the party, after a run of about twenty miles along the banks of the Severn, to Grange Court Junction, thence through Ross to Hereford at 7-24 p.m. One of the most charming circular tours in our kingdom.

At Tintern Abbey the party was met by one of the Vice-Presidents of our Club, Mr. Philip Baylis, Deputy-Surveyor, Royal Forest of Dean, who explained the general arrangements of Cistercian Abbeys, pointed out the purposes of the several buildings of which remains still exist in the Abbey precincts; also the discoveries recently made of other buildings connected with the Abbey, and explained the general line it is proposed to adopt to preserve the ruins from falling into further disrepair.

Leaving Tintern Abbey the party separated to follow, independently, their own bent. Some took the special train to Chepstow to visit the Castle, Church, ancient Port Walls, or even to inspect Offa's Dyke, and the Old Passage across the Severn to Bristol, in the Beachley Peninsular. The train service to and fro did not permit sufficient time to visit the Severn Tunnel Pumping Works at Portskewett. Others reached Chepstow by walking or driving. As shown by the milestones, Chepstow is 5 miles and 400 or 500 yards distant from Tintern Abbey. Tintern Abbey stands on a level of 50 feet above ordnance datum. The well-known Moss Cottage, on the elevation of 380 feet, is 3 miles from Chepstow. Some of the party ascended the Wyndcliff at the back of the Moss Cottage, whence, favoured with a remarkably clear atmosphere, they were rewarded with a most charming view of the surrounding

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PORTION OF WEST FRONT. CHEPSTOW CHURCH

No. 37. To face No. 38, between pages 288 and 289. *Photo. by F. H. Worsley-Benison.*

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FONT IN CHEPSTOW CHURCH.

No 38. To face No. 37, between pages 288 and 289. *Photo. by F. H. Worsley-Benison*

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PORTION OF WEST FRONT. CHEPSTOW CHURCH

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FONT IN CHEPSTOW CHURCH.

No 38. To face No. 37, between pages 288 and 289. *Photo. by F. H. Worsley-Benison*

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counties from the "Prospect" on the summit, on the contour of 700 feet. Of these counties, on the authority of Mr. James G. Wood, the following can be seen:—"In front, Gloucestershire, Wiltshire (near Badminton), Somerset, Devon (if clear), Glamorgan, and Monmouth. From the back can be seen the Abergavenny Hills and the Black Mountains of Brecknock and Herefordshire."

Ample literature was provided in the following papers:—

"Things to observe between Ross and Chepstow"; by James G. Wood.

"A short history of Tintern Abbey and the Lordship of Striguil," by James G. Wood, treating of the Abbey from the manorial point of view.

Address by Mr. Philip Baylis on "The Cistercian Abbey of Tintern," treating of its architectural and domestic points.

On the bookstall in the Abbey grounds lay a new edition, very recently published, of "A Guide to Tintern Abbey," by our Jubilee President, Mr. Thomas Blashill.

A paper by Mr. Blashill, specially commended, is to be found in Vol. VI., Part I. of the *Transactions of the Bristol and Gloucestershire Archæological Society*, under the title, "The Architectural History of Tintern Abbey." He describes the approach up the Nave from the great double doorway in the West Front towards the great East Window as "giving an effect of perfect proportion, graceful lightness, and quiet beauty of detail, that could hardly be exceeded elsewhere." In an accompanying illustration (Plate VI.) he has restored in dotted lines the great and beautiful East Window, originally of eight lights, the head being filled with circles. The central mullion, now standing alone, actually measures six feet in girth. "This solitary shaft, carrying its scanty remains of tracery, is the admiration of all. . . . It is acknowledged to have been the most perfect of its class, and indeed, the finest Gothic window that was ever produced in this country."

REFERENCES.

For the benefit of our party the following references to previous notices of Tintern and neighbourhood recorded in the *Transactions* of the Woolhope Club were given:—

For Tintern—1877, pp. 4 to 11; 1880, pp. 239 to 245; 1900, page 90, referring to the purchase of Tintern Abbey by Government.

For Chepstow—1892, pp. 314 to 342; 1899, pp. 79 and 164.

For the Severn Tunnel Pumping Works—1895, p. 90, *et seq.*

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MAPS.

The Ordnance Survey Maps required for this district, on the scale of 6 inches to 1 mile, are :

For Tintern : Monmouthshire, Sheet XXVI., N.W. ; Gloucestershire, XLVI., S.W. ; price 1s.

For the Wyndcliff and Piercefield : Gloucestershire, Sheet LIV., N.W. ; Monmouthshire, parts of Sheets XXV. and XXVI. These are all on one and the same map, price 1s.

For Chepstow : Gloucestershire, Sheet LIV., S.W. ; Monmouthshire, parts of Sheets XXV., XXVI., XXX., and XXXI. These are all on one and the same map, price 1s.

As well as as could be ascertained the party included :—Members : The President (Mr. T. Hutchinson), Vice-President (Mr. Philip Baylis), Revs. J. O. Bevan, C. Burrough, C. B. Caldicott, W. S. Clarke, H. M. Evill, P. H. Fernandez, E. Gedge, H. E. Grindley, C. Harington, E. J. Holloway, A. G. Jones, E. King-King, C. G. Ledger, W. E. T. Morgan, F. S. Stooke-Vaughan, H. T. Williamson, and F. Wilmot ; Dr. Scudamore Powell ; Messrs. H. M. Apperley, E. J. Baker, J. Edy Ballard, S. H. Bickham, F. J. Boulton, W. E. Britten, J. U. Caldicott, J. Carless, R. Clarke, C. W. Radcliffe Cooke, Gilbert Davies, J. E. P. Davies, F. S. Hovil, A. G. Hudson, H. E. Jones, F. R. Kempson, C. J. Lilwall, C E. A. Moore, Walter Pilley, John Probert, C. Rootes, J. P. Sugden, H. Cecil Moore (Honorary Secretary), and James B. Pilley, Assistant Secretary.

VISITORS—LADIES. Mrs. Bensall (from Preston), Britten, Caldicott, Chave, Radcliffe Cooke, J. E. P. Davies, S. Deakin, Fitzsimons, Gedge, Holtom (from Bolton, Lancashire), A. G. Hudson, T. Hutchinson, King-King, Lilwall, Marshall, H. C. Moore, C. S. Morrison, Rob. Percival, W. Pilley, Scudamore Powell, Pritchard (Cleveland, U.S A.), Probert, Purchas (Bristol), A. Slatter, Wainwright, Hyett Warner, A. Watkins, F. Wilmot. Misses Ballard (2), C. E. Baylis, Clara Becker (Yorkshire), Caldicott, Chaplin, Chave, Isabel Clarke, Radcliffe Cooke, N. Davidson (Congleton), Davies, E. Dawson (Isle of Man), Fitzsimons, Gleig (Isle of Wight), Hatling, Heins, Frederica Jones, Averay Jones (2), Bertha Levason, Lilwall (2), Marshall, Derham Marshall (2), Milne, Pilley, Powles (Dacota, U.S A.), Pye, I. Roe, Percy Smith, Speits, Stooke-Vaughan, Turnbull (Lancashire), Wheatly (Yorkshire), and Yorke (London).

GENTLEMEN. General Jackson, Captain Hunter (Bristol), Revs. C. J. Burrough, and F. O. Philpott. Messrs. Anstruther (London), J. Edy Ballard (junior), Bensall (Preston), J. Brash, W. Haynard, A. G. K. Ledger, Derham Marshall, A. Slatter, and Wheatley (London).

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THINGS TO BE OBSERVED BETWEEN ROSS AND CHEPSTOW.

By James G. Wood, M.A., LL.B., F.S.A., F.G.S., &c.

"R" and "L" mean respectively on the right hand and on the left hand of the traveller from Ross to Tintern (facing the engine), thence by road, facing Chepstow.

At Kerne Bridge, Railway crosses Wye, enters Welsh Bicknor, which till 1840 was a severed part of Monmouthshire, called sometimes Gwentland and Intelinde. The next bridge (after a short tunnel) brings us into English Bicknor at Lydbrook Junction.

Bicknor, formerly Bicanofre (Bygan-ofer) or "The Windings of the Bank." Note the distance from Kerne Bridge to Symonds Yat Station is, as the crow flies, 2½ miles; by water over 9 miles.

Part of Bicknor is "The Windles," conveying the same idea. Similarly Windsor is corrupted from the old "Windle-shore."

At Lydbrook Junction (L), parallel to railway, a fine piece of Offa's Dyke, extending for about ¾ mile, and 150 yards from, and visible from the railway line, forming hedgerow of field next railway.

The belt of wood by the Dyke is Collin's Grove, probably corrupted from the Welsh Llwyn-celyn, "The Holly Grove," from the hollies on the Dyke.

The Coldwell Rocks (L) introduce us to the Carboniferous Limestone, through which a short tunnel pierces the Neck of Symonds Yat. This neck is crossed by a short length of the Dyke joining the precipitous cliffs on either side, but not visible from railway.

After a detour (below Symonds Yat) of about a mile round the Great Doward (R) we are opposite the Arthur's Cave (300 feet above the river on the west slope of the hill), to which the late Mr. Symonds conducted the Woolhope Club in 1874. (See *Transactions of the Woolhope Club*, 1874, pp. 15 to 31).

Just as Monmouth Town comes into sight a small church is seen (R) on the opposite river bank. This is now Dixton Newton, formerly Henllan Tytiuc, or Lann Tydiuc (in Lib. Llandav) and St. Tedeoc in the Saumur Charters. It was the site of an early College of St. Dubricius of Llandaff, before his later foundation at Moccas. The church was reconsecrated by Bishop Herwald between 1066 and 1070, "before the building of the Castle of Monmouth."

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AT TROY STATION.—Here we are between the Monnow and the Trothy, the latter giving its name to Troy House, just below the station.

The hill pierced by the tunnel at end of station is St. Dials, derived from a Chapel of St. Duellus, which has disappeared but is mentioned in a Bull of Urban iii. (1186) confirming grants to Saumur.

St. Dial's Hill is very probably the actual site of Blestium. The Watling Street went over it, the present road by station being a diversion. Part remains as a hollow way; part destroyed by works at west end of tunnel.

If delay at Troy Station allows, the Chapel of St. Thomas, by Monnow Bridge (exactly ½ mile from Station) is well worth visiting. First mentioned in the Bull of 1186, it is probably dedicated to St. Thomas of Canterbury, canonised 1173.

The approach to the Monnow Bridge was guarded by an extensive earthwork or *tête de pont*, marked on the map as Clawdd du (or Black Dyke), of which much can be traced behind the houses of Over-Monnow.

As we leave Troy by another bridge, we see the mouth of the Trothy (R), dividing the Lordship of Monmouth from the old Lordship of Striguil.

REDBROOK STATION.—The Weir just below the Bridge is Itheles Weir, granted to Tintern in 1330.

BIGSWEIR.—The Church and Castle against the sky line (L) is St. Briavels.

From Redbrook to Bigsweir we have run parallel (L) to perhaps the finest continuous length of Offa's Dyke; but it is not visible (except near Bigsweir), as it is set back behind the apparent brow of the hill. This length deserves a visit by itself, if only to study the yew trees on it.

AT BIGSWEIR STATION.—(R) Fine section of Old Red Conglomerate. Just below Station (L) the Weir (Bykes-wer, the weir in the bend), given to Tintern by Edward II. (1316).

This point is the limit of the spring tides.

The next village (R) is Llandogo, formerly Llan Oudocui, after the third Bishop of Llandaff.

TINTERN STATION.—The village (L) across the river is Brockweir, named from the brook which was (temp. Henry III. and Edward I.) the boundary of the Dean Forest and the Striguil Lordship. Just below are the remains of Quays and Stores where, until about 1860, coasting vessels used to tranship into lighters for Monmouth, Hereford, etc.

The high point above but rather to the left of the Tunnel, as seen from the station should be noted. It will be seen all the way round to,

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and from, the Abbey. It is the "Iwes Hæfda," or "Yew's Head," of the Edwy Charter of Tidenham. Offa's Dyke is just behind it, called the "Stanræwe" at this point in the same charter.

This headland gives a fine Geological Section. To the right of the railway bridge will be seen a disused quarry. This is the Upper Old Red, and produced some fine building stone similar to that used in the Abbey. The Tunnel is driven in the "Lower Carboniferous Shale." The rest of the hill is Limestone, capped a little way in from the brow by the Millstone Grit.

On the road from Tintern Station (L) is the small church of Tintern Parva.

Just by the Bridge of the Branch Railway to the Tin Works and by a Mill Pond we cross the Angidy Brook, and so enter upon the original possessions of the Abbey, of which this was the limit, as it was later on, of the Lordship of Striguil.

[Here comes in the Abbey (L)].

The road from Tintern to Chepstow is in no part ancient. As far as St. Arvan's it was made only in the last century. Till then the access to Tintern was by water, or by a road striking up the Angidy Valley to meet at Tintern Cross an old road from Monmouth to Chepstow, or by a bridle path (Porth cesyg) at the back of the Beaufort Arms over the Wyndcliff.

Soon after the 4th milestone (from Chepstow) the road leaves the river. From this point can be seen, starting from a tower on the opposite cliff and proceeding towards Tintern, a line of Yew Trees near the summit of the hill. That marks the line of Offa's Dyke which stretches thence right away back to the Yew's Head.

The peninsula opposite Wyndcliff is Lancaut. Offa's Dyke crosses its neck as at Symonds Yat. The Church is now quite decayed, but in my time contained an ancient lead font, figured (with that of Tidenham) in Ormerod's Strigulensia. But I do not agree that they were Saxon.

From the Wyndcliff can be seen, in front, Gloucestershire, Wiltshire (near Badminton), Somerset, Devon (if clear), Glamorgan, and Monmouth. From the back can be seen the Abergavenny Hills and the Black Mountains of Brecknock and Herefordshire.

The line of Quarries near Lancaut (now being worked for the Avonmouth Docks) is in the line of a good downthrow fault to the west, which at the southern end has brought down the Millstone Grit against the Limestone.

Proceeding towards St. Arvans' (2 miles from Chepstow) we cross the old Monmouth—Striguil road which entered Piercefield Park (L) and went right across it to the Roman Road for the Roman Bridge. We proceed to skirt the Park, and after the "1 mile" and the "Lion"

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Lodge at Piercefield, a short hill (up) brings to a few houses at Crossway Green. Here, by the old turnpike house, comes in (R) the Roman Road from Caerwent; it struck across our road at a slant and entered the Piercefield lands where some large doors now stand, and thence turned down to the Roman Bridge, the site of which is now on our left but not visible.

A little way up the Roman Road are the remains of the Priory of St. Kinsmark or Cynmarch.

As we come in site of Chepstow a good view over the wall (left) of the Castle, River, and Bridge, with the Vale of Berkeley and the Cotteswold Hills in the distance.

TINTERN ABBEY.

By Philip Baylis, M.A., LL.M., Deputy Surveyor, Royal Forest of Dean.

Mr. Baylis having met the Members at the Abbey entrance, conducted them through the Abbey Church, passing up the Nave, out through the North Transept to the east side of the Cloister Garth. Upon arrival near the Chapter House, he commenced his address, which he continued as he led the Members round the Abbey, concluding with the Abbey Church. He said:—We are standing on the ruin of the Cistercian Abbey of St. Mary of Tintern. Having remarked that all Cistercian Abbeys were built upon one general principle, he proceeded to relate a few facts concerning the one in which we were assembled.

This Abbey was founded in 1131 by Walter de Clare, otherwise Walter Fitz Richard, but the first Church has entirely disappeared, and you will observe that there is hardly any architecture of the 12th century remaining. We possess little information with regard to the Abbots who presided over the Abbey, but we know the names of one or two.

In 1187 there was a visitation of the Cistercian Abbeys in England, and William, who was then Abbot of this Abbey, was removed, and Vido, Abbot of Kingswood, was appointed in his place. In the 13th century one Robert was Abbot, and he apparently took to a little privateering with a French monk ("Eustace the Monk"), who was in charge of the French Fleet, which was destroyed off Dover. Randolph was Abbot in 1245, and John was Abbot in 1276. The last Abbot was Richard de Wych; he handed over the Abbey and the lands belonging to it to Henry VIII. in 1537, and in the same year the lands were re-granted by Henry VIII. to the Earl of Worcester; from the Earls of Worcester they came to the Duke of Beaufort, and from the present Duke they were purchased by the Crown four years ago.

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The Cistercians were a reforming branch of the great Benedictine Order. About the end of the 11th century one Stephen Harding, an Englishman, split off from the Benedictines, and an Abbey was founded at Citeaux (*Cistercium*), in Burgundy, hence the name Cistercians, and from that time they rapidly spread over Europe. The first Cistercian Abbey founded in England was either Waverley or Furness, in 1127 or 1128, Tintern being about the third or fourth of the English Cistercian Abbeys.

All Cistercian Abbeys were dedicated by rule of the Order to the Virgin, and hence a Lady Chapel was seldom to be found in Cistercian Abbeys, because the whole Church itself was "The Chapel of our Lady." Still, we do occasionally find them, though there was no Lady Chapel at Tintern.*

Another rule of the Order was that the Abbey should be built in a secluded spot. The part on which we are at present standing was the Abbey, and the part frequently, but erroneously, called the Abbey was the Abbey Church. An Abbey was the place where the monks dwelt, and an Abbey in those days was a community in itself. First of all came the clerics, and no Abbey could be founded unless there were an Abbot and 12 monks to begin with. There were also a large number of lay brothers, these varying according to the size of the estates.

As regards the general arrangement of the Cistercian Abbeys, there was a "settlement," with the cloisters generally on the south, probably because the south was the warmer and more convenient place; but at Tintern, no doubt on account of the contour of the ground, the "settlement" was on the north side.

Coming out of the Church through the north transept, we come into the Sacristy adjoining, and in continuation of it, to a barrel-roofed apartment in which most likely some of the Abbey books were kept. Next to that was always the Chapter House, in which were seats on three sides, and the Abbot, when presiding, sat at the middle of the east end. Then came the Parlour, or place where the monks might

* Whilst this volume is in the press we have received the following very valuable information from Mr. James G. Wood, F.S.A.:—

"At the time when the above paper and my own paper on Tintern Abbey were written, I should certainly have agreed with Mr. Baylis that there was no Lady Chapel at Tintern. But evidence has since come to my hands which points to the contrary. I have recently obtained from the Lateran Registry at Rome a copy of an Indulgence granted by Pope John XXIII. (March 3, 1414), to all persons who should on certain days attend at and contribute to the repair and decoration of 'the Chapel outside the Western door' of the Abbey, in which had been placed a miraculous image of the Blessed Virgin; and the special services there held and the attendance of numbers of persons from all parts are mentioned. Immediately outside the western end of the south nave aisle, and so within a few yards of the small door in the west end of that aisle (which is unusual) are the remains of a building which has long been a puzzle, but which seems now to be accounted for as a Lady Chapel; its anomalous situation being due to the miracle mentioned in the Indulgence. Examination of the exterior of the nave wall leads to the conclusion that this Chapel existed before the building of the present Church; for the sills of the last two of the aisle windows towards the west, and the string-course that runs below the windows were, in the building of the aisle, set at considerably higher elevations than the sills of the other windows and the rest of the string-course; apparently by reason of the proximity of the Chapel, though it was not bonded into the Church wall. It is to be hoped that the site of this Chapel may be carefully opened and examined by competent hands."—J. G. W.

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talk, because even when they met in the cloisters they were not allowed to speak to each other. Next to the Parlour, and still proceeding north, was a passage leading to the Infirmary and other buildings belonging to the clerical portion of the Abbey community. Proceeding still further north, we come to the Monk's Day Room, under the "Dorter." The word "Dorter" was an old English word meaning "sleeping apartment," though the word in addition to being applied to the sleeping apartments was also applied to parts of the Abbey that were not used for sleeping purposes. For instance, the latrines were called "the rere dorters."

Over the whole of the buildings which I have mentioned were dormitories, or dorters proper, in which the monks slept, and they could pass through a passage leading over the Chapter House to the doorway in the north transept, and thence down into the Church for the night services.

As regards the services, there were three at *Matins* (midnight), and at day-break came *Lauds*, about six or seven o'clock was *Prime*, *Tierce* at nine, *Sext* at 12, *None* at three, *Vespers* or *Evensong* about five or six, and then *Compline* when they went to bed. It would be seen that the monks were very well occupied during the day in attending the services.

Passing out of the Day Room is a staircase leading to the dormitories, and near to it was the Warming House, or Calefactory. At Tintern until quite recently it used to be called the entrance from the river. Inside the apartment named stood a hearth, the fire being placed in the centre of the room. Next to the Calefactory, in the Cloister and outside the Frater, were the Lavatories, where the monks washed their hands and feet before going into the Frater, or Refectory, where they dined.

One noticeable feature about Cistercian Abbeys was that the Frater (or Fratry) ran in its narrowest way from the Church, so that there should be the least possible chance of anyone in the Church being disturbed by any slight noise in the Frater, as would have been more likely if the Frater had run parallel with the nave of the Church. In the Frater there is an entrance to the pulpit. A pulpit was always placed in the Frater, and from it, during the time the monks were at meals, one of the brethren would read a portion of Scripture, or from the writings of the old Fathers. On the west side of the Frater was the Buttery Hatch, through which the food was passed from the Kitchen.

Next to the Kitchen were the quarters of the Conversi, or Lay Brothers. Though the Conversi took the monastic vows, and were monks in every sense of the word, they were not the clerical part of the community. Once a man became a Lay Brother he generally remained a Lay Brother. The Lay Brothers and the clerical section had their separate entrances to the Church.

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The buildings that had recently been discovered at Tintern were probably part of the cellarer's apartments, and a cellarer was a very important official in a Cistercian monastery. He was in the position of a steward, and took charge of all the tools, implements, and general stores of the place, and it was necessary that he should have a dwelling to himself, and also considerable buildings adjacent.

Extending westwards we have recently come across other foundations, which were probably those of the old bakehouses, and a considerable distance further to the west, at the end of the orchard as we approached the Abbey, we found the foundation of a considerable length of walling, which was probably the gate-house.

Outside the apartments of the Conversi were the stables, the slaughter-house, the bake-house, the mill, the granaries, the workshops, the Lay Brothers' Infirmary, and many other buildings. On the "cleric" side were the Infirmary, the Abbot's apartments, the *Miserecorde*, the guest house, &c.

On the south, the side removed from the "settlement," was an entrance through the south transept for the public when they were admitted; but Abbeys were by no means built for the public. They were really intended that the monks might live there by themselves, and perform their worship, and it was more as an act of grace that the public were allowed to enter.

There was one fact that would probably be of interest to those present, coming as they did from Herefordshire. In the year 1289, just after the present Abbey Church had been opened, Tintern Abbey was visited by Bishop Swinfield, who was one of the best known of the old Bishops of Hereford. The building of the present Church was commenced about 1269 by Roger Bigod, Earl of Norfolk, and the first service was held in 1287. William of Worcester visited it nearly 200 years afterwards, when he took particular note of the size of the Abbey, when it was begun, when it was opened for service, and also when High Mass was first celebrated in it. He put it down that High Mass was first celebrated in the Church in the year 1288, and as Bishop Swinfield visited it the following year, it was probable that he was then making a visitation of his Diocese, and came to see the new Church.

Mr. Baylis mentioned portions of the building which were 12th century work, and referred to the various building operations carried on from time to time, ending with the re-building of the cloisters about 1486, in consequence of a gift of William, Earl of Pembroke, but probably the times that were then disturbing the monasteries generally caused them to stop the work, and after the dissolution of the monasteries nothing further was done.

Mr. Baylis then conducted the party through the Abbey and grounds, carefully explaining everything of interest. He first drew attention to the discoveries which have been made since the Abbey came into the possession of the Crown, first of all pointing out an arch which

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was discovered near the new entrance, on what was until recently the site of a cottage occupied by the caretaker of the Abbey. Carrying their investigations further one or two other arches were met with, and also a staircase, which was hidden by another cottage, and also indications of a roof over the staircase.

Mr. Baylis next showed where excavations had been made to a depth of about five feet, bringing to light an old watercourse, which had been previously entirely hidden by the soil which had accumulated. Possibly, he said, it was one of the streams that came from the mill, and was used for sanitary and other purposes. It was a very large watercourse, and was entirely silted up to a point which he indicated. There was a very curious division of the watercourse, and for what reason no one had been able to say.* On the right hand side almost embedded in the ground, could be seen the lip of the stone gutter that brought the slops out of the Kitchen into the stream.

The whole of the ground on the north of the Kitchen and Frater was until recently a garden, but many hundreds of tons of *débris* had been removed, and the place opened to the public, and from one part of it a very fine view of the Abbey was obtainable. Some remains of the old Abbey buildings were also observable, and another part that was formerly walled up, led to the Cloisters. On the site of the old Warming House was one of the few bits of groining left, and in the floor were the bases of four pillars which carried a similar number of arches over the hearth. Only one fireplace was allowed in the Abbey, and that for the use only of the weaker brethren during the very cold mornings in winter, when they conducted the early services in the Church. They were allowed to come down there and warm themselves for a short time, and the hearth was so arranged as to get the greatest number of monks round it.

In the staircase which was used in the daytime by the monks in going up to the dormitories, was fortunately left a stone which showed the level of the floor. In the Monks' Day Room was a wall which had undoubtedly been built against an earlier wall, and Mr. Baylis further mentioned that they had discovered the jambs of an old window. In taking out some loose masonry was found the only bit of herring bone masonry in the Abbey, which was probably the back of a very old fireplace that was there before the Abbey took its present form. Mr. Baylis regretfully remarked that all who visited the Abbey did not appreciate the ruins as those present would, for since these discoveries had been made, someone, for sheer mischief, had broken off the piece of a jamb, and in the Chapter House more mischief had been done.

In the Frater, or Refectory, Mr. Baylis said they could see where the steps commenced leading to the pulpit. Inside the Church one of the finest vistas of arches in the Abbey could be seen looking north

*Probably conveying the water supply by two separate channels from the Angidy brook, and, possibly, one channel might have served for the purpose of flushing the other.—(EDIT.)

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from the door in the south transept. Although the whole Church was so nearly uniform in style, there were some differences in the masonry, particularly about the windows, which indicated the order in which those parts were built. According to Mr. Thomas Blashill, who had given a great deal of attention to this Abbey, the eastern part, the south transept, and one bay of the nave appeared to form the part which was first built and used in 1287. The choir was opened in the following year, and three or four of the bays of the nave seemed to be of about the same date. The two western-most windows in the south aisle, the great west window, the western part of the Clerestory, and the whole of the upper part of the north aisle wall showed a change in the details, which indicated a later date. The north transept seemed to have been built last of all, for the mouldings of its windows were of advanced 14th century character, and its aisle was spanned by two flying buttresses which were the only flying buttresses used in the Abbey.

In conclusion, Mr. Baylis explained the general line it was proposed to adopt to preserve the ruins from falling into further disrepair. It was proposed by those who advised the Crown that they should do nothing in the way of restoration in the ordinary sense, and that they should only keep, as far as they could, that which was there, and try to prevent it getting into a further state of ruin. They did not please everybody by doing that, and only recently, after filling in one of the large buttresses at the west end, which had been torn out for the purposes of building at one time or another, they received letters complaining of what had been done. They had, at all events, the approval of those whom they believed knew something about these matters. When they put in new work, it was done without any attempt to imitate the old, so that those who came afterwards would be able to say "This masonry was put in by way of protective work to what was left after the Abbey had been partly destroyed."

Mr. Thomas Hutchinson, the President, said before they separated he was sure that every one present would wish to express their gratitude to Mr. Baylis for the very interesting remarks he had made, and for the assistance he had given to the members in understanding that beautiful old ruin.—The vote was carried by acclamation.

A brief "History of Tintern Abbey and the Lords of Striguil," specially prepared and gratefully dedicated to the President and Members of the Club, by Mr. James G. Wood, was presented to each Member present.

The Club desires to express their high estimation of this work of labour and love, the result of careful original research on the part of Mr. Wood, their indebtedness and gratitude to him for this valuable contribution to the history of Tintern Abbey from the manorial point of view. The "History" is herewith reproduced.

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"A SHORT HISTORY OF TINTERN ABBEY" AND THE LORDSHIP OF STRIGUIL.

By James G. Wood, M.A., LL.B., F.S.A.

To the President and Members of the Woolhope Naturalists' Field Club, this brief contribution to the History of the Marches, written for the occasion of their visit to Tintern Abbey, July 21st, 1904, is dedicated in grateful recognition of their labours in the same field.

The history of "the Church of the Blessed Mary of Tintern," (to give the Abbey the name which, with one exception, it has throughout its Charters,[1]) is intimately connected with the history of the Lordship Marcher of Striguil, otherwise Chepstow; within the limits of which it stands, and the Lords of which were its principal founders and benefactors.

Hitherto, however, the history of the Lordship has been written with a total disregard of the Tintern documents. Two only of the most important of these appear in the Monasticon; where they are partially and incorrectly printed from inaccurate 16th century copies.

The consequence is that the history both of the Lordship and of the Abbey has been seriously misunderstood; and as these misunderstandings are being constantly repeated, I have thought that a short statement of the results of many years study of the whole subject, with an intimate personal knowledge of the locality, may be acceptable. It is of course impossible within the limits of this paper to give the details of the steps leading to those results; and where my conclusions differ, as they do largely, from those of former writers, I can but ask my readers to await the fuller discussion of the facts which I hope shortly to publish, with the texts of the documents to speak for themselves.

The name Striguil was until the 14th century applied to the Town (which apparently did not exist before the Conquest), the Castle and the Lordship. After 1306 the Town was generally known as "Chepstow"; while the Castle remained as Striguil till much later.

The Lordship, in its earlier days, extended from the confluence of the Trothy near Monmouth to the mouth of the Wye; and westward, from that frontage, to the Usk, with the exception of some areas

1 "Ecce enim ex hoc Beatam me dicent omnes generationes; quia fecit mihi magna Qui potens est."

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along Severn ; and from near Tintern downwards it also included the old Saxon Manor of Tidenham on the east side of the Wye. It comprised the possessions there of William fitz Osbern Earl of Hereford, the builder of the earlier part of the Castle. These, by the successive forfeitures of his son Roger de Breteuil and his son-in-law Ralph de Limesi (conspirators with his other son-in-law Ralph de Guader 1076), and of William d'Ow (1095), reverted to the Crown before the accession of Henry I.

Walter fitz Richard, to whom Henry I. granted the Lordship about 1115, is by modern writers commonly called Walter de Clare ; a name which he never used, and is nowhere found in the Charters, where he is always called "Walterus filius Ricardi." His father Richard fitz Gilbert (commonly called de Clare or de Bienfaite) who died 1091, was the son of Gilbert Crispin Count d'Eu the founder of Bec Hellouin in Normandy. His mother Rohais, daughter of Walter Giffard Earl of Buckingham, was the foundress of the Priory of St. Neot in Huntingdonshire ; her brother Walter being the founder of the Priory of Longueville.[2]

Walter fitz Richard, as lord of this Lordship Marcher, founded Tintern Abbey in 1131 ; assigning to the Monks "the Hay of Porthcasseg" ; extending along the Wye from the Angidy Brook (which falls into the river about a quarter of a mile above the Abbey) down to the Wyndcliff ; and comprising the parish of Chapel Hill, Porthcasseg, and part of Penterry.[3]

It has been asserted persistently that he founded the Abbey at the dictation of the Bishop of Llandaff, as a penance for his possessing himself of Church lands. There is no evidence whatever for this, which is a purely absurd conjecture arising from the fact that Bishop Urban (1107—1133) procured from the Popes, Calixtus II. (1119) and Honorius II. (1128), Bulls addressed to Walter fitz Richard and many other Norman lords, accusing them of despoiling the Church. But the fact is that the dispute was only part of the perennial one between the Secular and the Regular Clergy ; and it was the establishment of Religious houses under the control of "foreign" Abbots or Priors that was distasteful to the Welsh Bishops and, in the view of Urban, an infringement of the "Privilege of Teilo." All the lords so attacked were the founders or benefactors of religious houses, of various Orders, in Wales and the Marches ; many of which they had already founded before the trouble began. In fact and truth the early Norman Monasteries in

2 About 1115 Walter fitz Richard and his brother Gilbert were witnesses to a confirmation by Henry I. and Queen Matilda of the grants of Henry Comte d'Eu to their grandfather's foundation at Bec ; and in 1121 Walter fitz Richard witnessed a confirmation by Henry I. and Queen Adeliza of other grants to the same foundation.

In 1200 William Marshal, to be presently mentioned, at the request of his wife Isabella, a descendant as we shall see of Rohais, confirmed the Longueville grants.

3 Tintern was one of the earliest homes of the Cistercian order founded in Great Britain. The dates of those most interesting to us are ; Furness (as the first) 1127 ; Waverley 1128 ; Neath 1129 ; Tintern 1131 ; Whitland 1143 ; Margam 1147 ; Flaxley, 1150 ; Dore 1150 ; Strata Florida 1164 ; Llantarnam 1179 ; Valle Crucis 1200 ; Grace Dieu (Hendre) 1226.

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Wales and the Marches were founded in spite, and not at the dictation, of the Welsh Bishops.[4] What we have said as to Walter's connexions shows that he belonged to a family of Monastery founders.

The suggestion moreover that Walter was "a spoiler" of the Church does not take account of the view of Church tenure which presented itself to feudal minds. All land, even that given to sacred uses, was held of a lord; and with the dispossession of the lord, the title of the holders went also. The general effect of the Norman conquest (or rather "acquisition") was the cesser, wholly in theory and largely in practice, of the grants under Saxon kings or lords. A clear assertion of this principle, for our purpose, occurred when William Marshall, the younger, at the burial of his father, repudiated the charge made against the latter by an Irish Bishop of having despoiled the Church. He had merely asserted the legal rights resulting from conquest, subject to which the lands had been held.[5]

As Walter fitz Richard had sovereign rights as a Lord Marcher, there is no evidence of, nor indeed was there occasion for, a confirmation by Henry I. of his grants to the Abbey. It does not appear that the King was among its benefactors; but his second Queen, Adelais of Louvain, was.

On the death of Henry I. (1135) Walter fitz Richard attached himself to Stephen, and appears to have been in frequent attendance upon him. Placed as he was, at Striguil, between those who became the great supporters of the Empress Matilda, Milo of Gloucester (to whom ultimately was given by her the whole of the Dean Forest with the Earldom of Hereford) on the east, and her half brother Robert Earl of Gloucester and Lord of Glamorgan, and Brian fitz Count, of Abergavenny, on the west, it is obvious that, but for the adherence of Walter fitz Richard to Stephen, the plans of the Empress might have taken shape at an earlier date than they did.

Walter fitz Richard died without issue (1138) and was buried in his Abbey.[6] Although considerable family estates on the east of Severn and in Huntingdon devolved from him to his nephew Gilbert Strongbow (son of Walter's elder brother Gilbert of Tunbridge), the Lordship escheated to the Crown for want of lineal heirs; for as Walter fitz Richard was the first feudatory, or grantee, it could not (by a rule of feudal tenure which previous writers have missed) pass to his collateral heirs.

4 This is illustrated by the fact that the immediate consequence of the appointment of Bernard, the Chaplain of Henry I.'s Queen, to the Bishopric of St. David's was the foundation by Gilbert of Tonbridge (Walter fitz Richard's elder brother) in 1115 of the Priory of Llanbadarn, Cardiganshire, attached to the Abbey of Gloucester. See Cartulary of Gloucester ii. 73.

5 See Matthew Paris, p. 687, fol. edition. In the same connection it may be noted that the Manor of Tidenham just mentioned was at the time of the Conquest in the hands of Archbishop Stigand as lessee under the Abbey of Bath, to whom it had been granted by Edwy. William fitz Osbern took possession of it as a matter of course; and no adverse claim appears to have been made by the Abbey.

6 His wife Elizabeth is mentioned in the Gloucester Cartulary (vol. ii, 118) in connection with property at Stonehouse, near Stroud; but I have been unable to trace her parentage; and I do not find the fact of the marriage mentioned by any other writer.

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Stephen's position had to be secured; and it was essential that Striguil should be confided to faithful hands. He naturally turned to Gilbert Strongbow, the nephew of his old adherent, whose wife Isabella (formerly Elizabeth), daughter of the Earl of Mellent, had moreover stood in the same illicit relation to Henry I. as the mother of Robert the Lord of Glamorgan had done.[7] In 1138 he created Gilbert Strongbow Earl of Pembroke with a grant of Walter's Lordship, which first in the hands of the new grantee was called "the Lordship of Striguil" from the "Castellum de Estrighoel" (*vide* Domesday), the head of the Lordship. In Walter's time it had been spoken of as "Gwent Iscoed," or "Netherwent."

The Empress with the Earl of Gloucester landed in England in September, 1139, and matters with Stephen were becoming serious. In this state of things the political and strategic position was further strengthened by the marriage (arranged at Striguil on the feast of All Saints and solemnized at Monmouth on that of St. Martin, 1139), of Gilbert Strongbow's daughter Rohais with Baderon the Lord of Monmouth and Goodrich; thus imposing a friendly barrier right down the east of Monmouthshire between Robert and Milo.

It is significant of the state of the times that Gilbert Strongbow, the father, was unable to be at the marriage; probably being with Stephen's army on the Cotswolds; and the bride was given away by her paternal uncle, Walter de Sap, who, by an unfortunate anachronism, has been mistaken for Walter fitz Richard. This has been the source of endless confusion.

As was proper on the newgrant of the Lordship Gilbert Strongbow granted to Tintern a confirmation of his uncle's foundation grant; and he also added other benefactions in Tidenham and Woolaston.

Before the treaty between Stephen and Henry, Gilbert had quarrelled with the former;[8] but in the position he held was safe against dispossession; and he died in possession of the Lordship in 1148, being succeeded by his son, Richard Strongbow, 2nd Earl of Pembroke.

In the meantime the Empress had created Milo of Gloucester Earl of Hereford, and granted him the Castle of St. Briavels and the Dean Forest, which brought him almost to the doors of the Abbey. It was not for the interest of either faction to quarrel with the Church;

7 This Isabella had by Henry I. a daughter Isabella who, with her mother, was a witness to Richard Strongbow's foundation Charter of Usk Priory. Isabella, the daughter, was unmarried at the date of the Continuator of W. de Jumieges (circa 1137). See Duchesne Norm. Scrip., p. 207. I think it more than probable that she is the same person as Basilea, who married Raymond le Gros (also a witness of the Usk Charter), and who, although called sister of Richard Strongbow, is nowhere called daughter of Gilbert. The change of the name Isabella to Basilea on her marriage would be in accordance with a practice that seems not uncommon at the time. Thus her mother, Elizabeth de Mellent, was always after her marriage called Isabella; and Hawisia or Avice, daughter of William Earl of Gloucester and Lord of Glamorgan, was after her divorce from Prince John and her marriage to Geoffrey Earl of Essex, called Isabella. See her seals figured in Dr. de Gray Birch's Margam Abbey.

8 Gesta Stephani, 126.

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and Milo sought the goodwill of the Abbey by granting them a right to carry on an Iron Forge at St. Briavels with necessary rights in the Forest.[9]

Richard Strongbow on his accession to the Lordship confirmed the grants of Walter fitz Richard and Gilbert Strongbow; and added to them several fisheries in the Wye and Severn.

By the death of Stephen in 1154 Henry II. came to his own. His uniform policy was to recognise no grant of Stephen as valid, as being made "during the anarchy"; and whenever he granted a confirmation it was that the lands should be held "as in the time of Henry my grandfather." So he could not tacitly pass over the Srongbow and Milo grants; but required the Monks to accept a confirmation from him; and such was accordingly granted by the King at the siege of Bridgnorth in the summer of 1155, with the addition of many further privileges.

There is no doubt that, as was done in other cases, Richard Strongbow, about the same time, having attached himself to the King, obtained a confirmation of his position as Lord Marcher. He shortly afterwards founded Usk Priory also within the Lordship.[10] Having earned the title of "Conqueror of Ireland," he married Eva daughter of Dermot McMurrough King of Leinster; and died in 1176, leaving his wife, and his only child Isabella who, in 1189, married William Marshall the elder, who was then created Earl of Pembroke,[11] and so acquired the Lordship of Striguil in right of his wife, being already the Marshal of England in his own right. In the early days of Henry III. he was known as "the Protector." He obtained from King John a grant of Goodrich Castle (1204); and was the founder of the Abbey of "De Voto" (also called Tintern) in Wexford; one of the Abbots of which, Henry of Lancaut, is buried in the Cloister of our Tintern, where his tomb may still be seen.

From William Marshall the elder the Abbey received further benefactions, but his charter is not extant. He died in 1219, and was succeeded by his eldest son William Marshall the younger; who, confirming all previous grants, added to the possessions of the Abbey the whole of the parish of Trellech Grange, the Monkswood near Usk, and extensive rights of Common in the Moors by Severn, and in the Wentwood and Tidenham Chase. This most instructive Charter was executed at Striguil March 22, 1222-3. He married Eleanor sister of

9 It must not, however, be forgotten that Milo, in consequence of threats and illegal demands upon the Bishop of Hereford, was afterwards excommunicated, and the whole district under his control was laid under an interdict: and he died "unassoiled," by an accident in Dean Forest, on Christmas Eve 1143. (Gesta Stephani, 99.)

10 See note 7 page 303.

11 There was at one time much controversy whether Richard Strongbow had not had a son Walter; and Mr. Ormerod rather supported the affirmative, upon a passage in one of the Tintern Charters as printed in Dugdale from the Arundel MS. Some years ago I suspected that there was some error; and found three words had been deleted from the MS. in a later ink, which on reference to the Rolls I found to be in the original Inspeximus of Ed. I. The true text is quite inconsistent with Mr. Ormerod's suggestion.—Since then Mr. Round has fully disposed of the imaginary Walter in his "Commune of London."

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Henry III.; who survived him and married, secondly, Simon de Montfort Earl of Leicester; but, as were all his brothers, he was childless.

His next brother, Richard Marshall, who succeeded him in 1231, is best known for his rebellion against Henry III.; and we do not find any grant by him to Tintern.

Gilbert Marshall, the next brother, succeeded in 1234; and granted three Charters to Tintern. The first was the usual confirmation Charter; the second (in 1240) a grant of a portion of venison, for the Infirmary of the Abbey, from all deer killed in the park of Trellech; the third a grant of the right to take for the use of the Monks Tannery all the bark from trees felled in the Forest of Netherwent at 2d. a load. He was killed in a tournament at Warwick in 1241.

Walter Marshall succeeded and gave two Charters; the first of additional lands near Trellech; the second a grant of exclusive rights of milling in Tidenham; and of certain lands near the Wyndcliff "for the purpose of maintaining continually one lamp burning at the tomb of our mother Isabella," who had been buried in the Abbey. She must have died soon after her husband, William Marshall the elder; for I find her last mentioned on the 12th July, 1219; and she was dead at the date of her eldest son's Charter above mentioned.

Walter died at Goodrich on the 27th November, 1245.[12] His only surviving brother Anselm died at Striguil on the 23rd of the following month, without having done fealty to the King; and therefore he is not reckoned as a Lord of Striguil or Earl of Pembroke. Walter and Anselm were buried at Tintern.[13] With them the male line of William Marshall the elder became extinct; and a partition of his extensive estates was made between his five daughters, or their descendants.

Maud, the eldest daughter, had married Hugh Bigod, 3rd Earl of Norfolk. She took Striguil or (Chepstow) Castle with the title of the Lordship, and so much of its possessions (speaking generally) as lay to the South of the Angidy Brook which falls into the Wye at Tintern and a line thence to the Golden Hill. The northern part, including Usk Trellech and Troy, fell to Richard de Clare Earl of Gloucester and Lord of Glamorgan, son of Isabella another daughter of William Marshall the elder; and he forthwith (1246) made further grants to the Abbey.

Mand died in 1248 and was buried at Tintern. The Lordship thereupon passed to her son Roger 4th Earl of Norfolk; and from him, in 1270, to Roger Bigod, 5th and last of the Earls of Norfolk of the Bigod family.

12 This is from William Wyrcestre's Diary, mentioned later on. Matthew Paris gives other dates in November, and says that according to some he died in London; but he mentions his burial at Tintern.

13 William Wyrcestre says that Anselm was buried at Tintern. Mr. G. T. Clark says he was buried at Tewkesbury; but gives no authority.

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This Roger was, probably, the greatest of all the benefactors of the Abbey. No less than eight of his Charters to the Abbey are extant, containing grants of lands and privileges in Monmouthshire, Gloucestershire, and Norfolk. Besides these the Abbey owed to him the Church of which we now have but the ruins, being in part an enlargement of an earlier Church which had sufficed for the Monastery during the first 150 years of its existence. William Wyrcestre in September 1477 visited Tintern for a week-end, and has left in his diary, preserved at Cambridge, notes of his observations and of the information he obtained there. From these it appears that the new Church was first used in 1287; and that the great East window contained eight panes of glass with the arms of Roger Bigod.

Shortly before this (in 1266) Prince Edward (afterwards Edward I.) granted possessions in Hewelsfield (Gloucestershire) to the Abbey.

In October, 1302, Roger re-acquired from Tintern, by exchange, lands at the west end of the Wentwood on the border of the now reduced Lordship; and built there Cas Troggy Castle, often confounded with Striguil Castle.

Roger died in 1306 without issue; and, under a re-settlement of his estates which he had effected with the King, in 1302, for valuable consideration, [14]the Lordship and the rest of his possessions escheated to Edward I., who in the following year granted four Charters of confirmation of all the preceding grants to the Abbey. In 1312 Edward II. granted the Lordship and all the honours and possessions late of Roger Bigod to his own half-brother, Thomas Brotherton, whom he created Earl of Norfolk, and from whom they ultimately (1461-2) devolved upon John Mowbray, 4th Duke of Norfolk.

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14 The transaction has been seriously misrepresented by several writers; and not the least by Mr. J. E. Morris in his "Welsh Wars of Edward I." (1901), a book which is very valuable and generally most trustworthy. He (p. 303) represents it as a stripping of the Earl of Norfolk of his power and his estates, and an act of vengeance on the part of the King, "from whom he received all back for his lifetime only." This could not have been written had the six charters by which the transaction was carried out been first read.

The facts were as follows: When Edward I. had completed the subjection of Wales by the death of Llewellyn (1282) his next work was to reduce the independence of the Marcher Lords; whose position so far had been useful but might now prove a menace to the Crown. The Earls of Gloucester, Hereford, and others as the result of legal proceedings, which Mr. Morris has well described, accepted regrants of their forfeited lordships on terms which established the paramount position of the Crown.—Roger Bigod was not a man to be dealt with in this way. At the time (1302) he was childless by both his marriages, and had been married twelve years to his second wife Alice of Hainault. He had no occasion to consider his brother and presumptive heir, John Bigod, who already had large estates in Norfolk. He surrendered to the King (12th April, 1302) all his honours and possessions, except the manor of Acle in Norfolk, of which he made a grant to Tintern (18th May, 1302), and except some specified manors, &c., in Yorkshire and Norfolk. All that was so surrendered, the King (11th May, 1302) regranted to Roger not for his life, but for an estate tail; so that, had he ever had any descendants, the lordship and other estates would have descended to them: but they could no longer pass to collateral heirs or be disposed of without the King's concurrence. The King had a twofold purpose; he wanted the admission that the lordship was dependent on him; and also to be able to confer the lordship on his younger son Thomas de Brotherton, a project which his successor gave effect to.

But the King gave very valuable consideration for the concessions so made by Roger. On the 13th April, 1302, he granted him for his life a rentcharge of £1,000 a year charged upon possessions of the Crown in several counties.

The grant of the lordship to Thomas Brotherton mentioned in the text was made subject to the dower of Roger's widow, Alice; which of course would be inconsistent with Roger holding the lordship for his life only.

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No further grants of importance to the Abbey appear to have been made, but the list of benefactions includes a grant by Edward II. (16th October, 1326) of the Crown moiety of the Bigsweir fishery on the Wye, which was made by the King at Striguil, just before he took ship there on his last fateful journey, in return for the hospitality afforded him by the Monks at Tintern on the preceding days; and with a grant (25th March, 1330) of Itheles Weir (that is Redbrook Weir) by Sir John Joce of Newland; and a bequest by Edmund Mortimer, 3rd Earl of March (who in right of his wife Philippa was Lord of Usk and Trellech, and died 1381) of a complete set of vestments for use in the Church.

In 1468 Sir William Herbert, then recently made Earl of Pembroke (of a new creation), obtained from the Duke of Norfolk the Castle and Lordship of Striguil and the Lordship of Gower in Glamorganshire by way of exchange. He had also acquired the sub-lordship of Raglan through a purchase from the Bluet family, and this the King erected into a new "Royal Marcher Lordship of Raglan" (1465)[15] Captured at the head of the King's forces at Hedgecote (26th July, 1469) he was the next day beheaded by the followers of the Earl of Warwick at Northampton,[16] and his body was brought to Tintern and there buried. The list of those who had died on the field is copied into William Wyrcestre's Diary evidently from a list made for the purpose of the obits directed in the Earl's will, the contemporaneous official copy of which is extant.

This will is interesting as containing a gift in the following words —"And that a C tonne of be yovin [17] to make the cloistre of Tyntarne"; showing that at that date the cloister was being built or renewed. Of what material the 100 tons were to be we are left to guess. There is no blank or erasure in the Probate copy after "of." Timber, stone, and lead have severally been suggested. The first two seem unlikely, as the Abbey had already under its Charters ample rights of cutting timber and quarrying stone for building and repairs. Lead I think improbable, for the quantity mentioned would, if of an ordinary gauge, cover not only the cloister, but the whole Cloister Garth four times over.

From this Earl of Pembroke the Lordship descended to Henry Earl of Worcester; but in his time, by the Statute 27 Hy. 8 (1535), it was shorn of the greater part of its privileges, and lost its royal rights and jurisdiction. All the Lordship Marchers were united, some to English counties, some to Welsh; all the distinctive laws of the March were abolished, and the Lordships became little more than ordinary Manors.

15 Hence the title of Baron Herbert of Raglan, Chepstow, and Gower borne by his successors the Dukes of Beaufort. Raglan had been, about 1160, granted by Richard Strongbow to Walter Bluet to be held by subinfeudation as a mesne Lordship under that of Striguil.

16 Not in the porch of Banbury Church; as told by Wordsworth in the "White Doe of Rylstone," and by others. This would be wholly inconsistent with several passages in the will which were omitted by Nicholas Harris in his "Testamenta Vetusta." The account of the transaction in the History of Croyland agrees with the conclusions to be drawn from the will.

17 Middle English for "given."

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In the following year (1536) upon the dissolution of the Monastery, the site of the Abbey and the greater part of its possessions were granted to the same Earl of Worcester, from whom the whole (with the addition, by a grant from Edward VI., of the Trellech and Usk Estates, severed from the Lordship as we have seen in 1245,) ultimately descended to the present Duke of Beaufort; by purchase from whom the site of the Abbey and its immediate surroundings have recently been acquired by the Commissioners of His Majesty's Woods and Forests. The Lordship, also by purchase, is now vested in Edward Curre, Esq., of Itton Court; the Manor of Tidenham, again severed from it, having been previously acquired by Sir William Marling, of Sedbury Park.

This is no place for a controversial treatment of the subject; but some who may read these pages may think that, in dealing with the history anterior to Richard Strongbow, I have overlooked Mr. Marsh's account in his "Annals of Chepstow Castle," published in 1883, and the authorities to whom he refers.[18] I must therefore add a few words of explanation, which however will be necessarily difficult to follow without reference to the books mentioned.

Mr. Marsh, founding upon the previous writings of Mr. Wakeman, Mr. Ormerod and others, elaborated, and in part evolved, a theory that Gilbert Strongbow's grandfather (Richard de Bienfaite) his father (Gilbert of Tonbridge) and his elder brother Richard (whom he erroneously calls Earl of Hertford),[19] were successively Lords of Striguil; and that "by some means unascertained" Striguil became subsequent to the death of the latter in 1136, the property of Gilbert Strongbow; and that Walter fitz Richard was never Lord of Striguil; but by way of subinfeudation, Lord of Caerwent, a lordship not mentioned in any Charter of the period. How, as a mesne Lord of Caerwent, he could have founded Tintern without the concurrence of his chief Lord, or at all, is a difficulty that did not present itself to Mr. Marsh.

Mr. Marsh, on pp. 48 and following of his book, states nine propositions as to the earlier devolution of the Lordship, and of the Marshalship of England. It is a strong thing to say, but I am compelled to say it, that there is scarcely a statement in those nine propositions consistent with the facts; or that has any real evidence to support it.

The foundation stone of the whole error is a statement once made by Mr. Wakeman, that "Godfrey" Prior of Monmouth, who, he says, was present at the marriage of the daughter of Gilbertus Consul (that is the marriage of Baderon and Rohais which I have mentioned)

18 See Monmouthshire, &c., Antiq. Assoc. Papers, 1863 and 1867; Ormerod's Strigulensia, &c.

19 See Mr. J. H. Round's Geoffrey de Mandeville, p. 39—Gilbert the eldest son of the latter Richard was created first Earl of Hertford by Stephen at the same time that his paternal uncle Gilbert Strongbow was made Earl of Pembroke. He however ultimately joined with his maternal uncle the Earl of Chester in opposing Stephen.

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died in 1128; and hence it is argued that there was an Earl Gilbert who was Lord of Striguil before the death of Walter fitz Richard.

As a fact the Prior present at the marriage was Geoffrey, not Godfrey; and this Geoffrey who was contemporary with Gilbertus Consul is mentioned in Charters with Robert Bishop of Hereford (1131-1148), and with the "Comitissa Isabella," who cannot by any possibility be other than the Countess of Gilbert Strongbow, made such in 1138. Geoffrey the Prior was therefore living long after 1128, and certainly after the death of Walter fitz Richard.[20]

Once we arrive at this fact, we find that there is no evidence at all of an Earl Gilbert, or Comes Gilbertus, or Gilbertus Consul, in the Clare family before 1138 since the death, in 1035, of Gislebertus Crispinus Comte d'Eu (the father of Richard de Bienfaite), who is of course wholly out of the question; and the whole superstructure, invented to fit in with that supposed fact, falls to the ground.

The error, however, led both Mr. Omerord and Mr. Marsh to misdate and misinterpret the Charters of Usk and Cormeilles; to disregard the evidence of the Monmouth and Lira Charters; and to misquote a passage in the Valor Ecclesiasticus; all of which documents, when referred to their true dates, and properly construed, are consistent only with the story which I have briefly stated in the foregoing pages.

To sum up this part of the story in a few words. There were two Strongbows, and two only; Gilbert, Earl of Pembroke (1138-1148), and Richard, his son, also Earl of Pembroke (1148-1176); and they and Walter fitz Richard, the uncle of the former, were the only members of the Clare family who were Lords of Striguil; and no member of the Clare family was Marshal of England.

THE INDUSTRIAL ASPECT OF THE ABBEY.

In "English Monastic Life" Dom. Gasquet has recently given us a vivid picture of the interior of an English Monastery in the middle ages, and of its inner life. It is to be regretted that he has not also dealt with the daily work of some, at least, of such Religious Houses outside their walls. There are still many persons who never really get

20 Mr. G. T. Clark in his "Earldom of Pembroke" and "Land of Morgan," evidently copying from some of the writers I have mentioned, has fallen into similar errors as to the Clare family.

I venture here to publish, as an interesting subject for investigation, the idea which I have for some time held that Geoffrey the Prior of Monmouth mentioned in these Charters is none other than Geoffrey of Monmouth the historian. I am not aware that it has been suggested before that the historian had been the Prior; though some have supposed he was a monk; while the notion that he was Archdeacon of Monmouth is as great an anachronism as the identification of a Tudor building at Monmouth as his study.

The facts are these. Geoffrey the Prior occurs in four Charters which we must assign to the year 1139 or a little before or after. In four other Charters, which are certainly not later than 1148 and may be much earlier, and of which one would seem to follow very shortly after one of the "Geoffrey" Charters, Robert of Cormeilles had succeeded him as Prior. On the other hand, sometime in 1140 Uchtryd Archdeacon of Llandaff had been elected Bishop after the long vacancy consequent on the death of Urban; and Geoffrey of Monmouth (the historian) was appointed to the vacant Archdeaconry; and removing to Llandaff busied himself (according to Mr. Gwenogvryn Evans) in compiling the Liber Llandavensis until his death in 1154 shortly after his appointment to St. Asaph.

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beyond the notion that the monastic life was made up of the recitation of Divine offices in the Church, contemplation in the Cloister, and more or less of good living in the Refectory.

This was especially not true of the Cistercian houses. They were not only homes of religion and study, but centres of industrial and commercial enterprise. It may perhaps be pardonable to refer this strenuous side of their life to the Saxon qualities of Stephen Harding, the founder of the Rule of Citeaux.

We have seen indications of this in our brief review of some of the Tintern Charters. As ironmasters they had a Forge (which in those days meant much) in the Forest; and there are traces of their mining and metallurgy on the west of the Wye. In fact the ponds on the Angidy brook were probably in part built for the purpose. In this respect they were followed by their brothers at Flaxley at the other side of the Forest, who had even larger works; so much so that part of the Forest was allotted for their use, which is to this day called the Abbotswood.[21]

We have also mentioned their Tannery and their Mills; but no doubt their largest industry was agricultural and pastoral. The Cistercians became the principal flockmasters of the time, and traded largely in wool. The flocks of Valle Crucis laid the foundation of the flannel industry of the present day in the Vale of Llangollen. So it was at Strata Florida; and the ancient flannel fairs of Glamorgan testify to the outputs of Margam and Whitland. So valuable were such outputs, that when in 1193 the ransom of Richard I. had to be raised, the Cistercian wool was among the first sources looked to, and the monks of that order were compelled to give up the whole of their stocks.[22]

Tintern was not behind others in this business. Between the grants of lands and of common rights occurring in the Charters, they had in Monmouthshire and Gloucestershire alone several thousands of acres of pasture and sheepwalks. My attention has within the last few weeks been called to the existence at Florence of a mediæval MS. containing particulars of the European markets and emporiums. In the section relating to the wool trade, Tintern, Margam, and Llantarnam are mentioned with particulars of the outputs and prices obtained for different qualities.

21 Disafforested in 1870.

22 Wendover iii. 73; Newburgh ii. 109.

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The following figures, extracted from the "Taxation of Pope Nicholas," show the extent of the flocks and herds held by some of the principal Cistercian houses in 1291:—

Page of Taxatio.	Abbey.	Diocese.	Sheep.	Cows.
284	Margam	Llandaff	5,685	425
277, 282	Neath	Llandaff and St. David's ...	4,897	223
284	Tintern	Llandaff	3,260	100
174, 284	Dore	Llandaff and Hereford	2,740	54
289	Basingwerk ...	St. Asaph	2,000	53
277	Strata Florida ...	St. David's	1,327	426
276	Whitland	St. David's	1,100	88
285	Llantarnam ...	Llandaff	588	130
174	Flaxley	Hereford	240	35

THE PLACE NAME OF "TINTERN."

This "is said" to be a corruption of Dindeyrn or "the fort of the King." It would be somewhat remarkable if it were so; as the nearest military remains are one, two, and three miles distant respectively; the first being on the other side of the Wye; and the only British King whom we know of as associated with the place is Teudric, who, after he had resigned his kingdom to his son Meuric, sought a hermit's cell among the rocks of Tintern.

Moreover the only authority for anything like the required form is the Liber Llandavensis, to which we scarcely look for accurate orthography of British place-names, and in two passages of which it occurs as Dyndyrn, Tindirn, and Dindern.

There is, in the line of the woodland which divided Gwent, a series of place-names in which the names of trees occur. Close to Tintern we have Penterry (Penderi), *i.e.*, "the top where the oak trees grow"; a little further the Vedw, or "the birch grove," then Coed Llwyfos or "the elm wood." With this guide I think we may accept the derivation as from Ty'n-y-deri or Ty'n-y-derwen, meaning "the house in the oak grove;" which would have its analogue in the frequent Ty'nybedw, "the house in the birch grove." The persistency of the "y" in the first syllable, throughout the early Charters, is very significant.

I believe that the original Tintern before the foundation of the Abbey was at the place called Tintern Cross, where the ancient road from Monmouth to Chepstow mentioned in the Charters cut the road leading to Tintern Ford (Rhyd Tintern) where the ferry now is; beyond which Roman pavement is to be seen in a road leading over the Railway Tunnel towards Brockweir.

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Woolhope Naturalists' Field Club.

FOURTH FIELD MEETING, THURSDAY, AUGUST 25TH, 1904.

WYRE FOREST.

The Forest of Wyre was visited on Thursday, August 25th. Leaving Hereford at 9-20, Woofferton was reached at 10-20, and Wyre Forest Station, on the Tenbury and Bewdley Branch, at about 11-0 a.m.

Shortly before reaching Woofferton, about 300 yards south of the railway station, the line leaves Herefordshire and enters Shropshire. From Woofferton Junction, the Tenbury and Bewdley branch of the Great Western Railway, after running for two miles through a southern tongue of Shropshire, traverses, in the parish of Little Hereford, three miles of one of the northern tongues of Herefordshire. After passing Easton Court Station it crosses Ledwyche Brook, a tributary of the Teme, and re-enters Shropshire. The boundary thence between the counties of Worcester and Salop is so irregular that the line runs alternately through two to three miles of each county.

The line of the old disused canal, formerly called the Kington, Leominster, and Stourport Canal, is frequently visible on the left (west) of the line between Leominster and Woofferton, in the parish of Orleton. It is again visible beyond Wofferton in its easterly course towards the Severn at Stourport, fragments being seen occasionally on the left (north) of the line until, at the distance of about nine miles east of Woofferton. it is crossed by the railway line.

From *The Leominster Guide*, 1803, p. 236, we read that the idea of opening a communication from this district to Stourport on the Severn and the collieries was revived in 1790. By Mr. Dadford's survey a canal was projected from Kington through Staunton-on-Arrow, Kingsland, Leominster, Putnal Field, near Orleton, over Letwich (*sic*) Brook, through Cherry Orchard, Marlbrook, Sousnet, Pensax (a tunnel of 3,850 yards), Abberley, and Arley to the Severn near Stourport, an extent of 45 miles, through three tunnels, at the estimated cost of £82,907. The estimate was afterwards raised to £120,000, and an Act passed empowering to raise £150,000 by subscription. Great difficulties were encountered in its construction, especially in perforating through Putnal Field, near Orleton.

In *Historical and Topographical Account of Leominster*, by John Price, 1795, in the chapter on The State of Navigation, on pages 185 to 195, we read on page 195 . . . The work is completed from Sousnet to Leominster, except the tunnel at Putnal Field.

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In *The History of Kington*, by Richard Parry, 1845, we read, page 214, that the Survey was made by Mr. Dadford in 1789 . . . and that the work is completed from Sousnet to Leominster, but that the part towards Stourport has been found so expensive as not likely to be soon finished ; and that on the part between Kington and Leominster nothing has been done except a small portion at Kingsland.

Sousnet is situated between Marlbrook and Pensax, where the long tunnel of 3,850 yards penetrates the southern part of the Forest of Wyre Coal Measures.

About 11 miles after leaving Woofferton railway station, half a mile northwards of Neen Sollars, in Shropshire, the line traverses a geological fault in the cutting where, for the extent of one furlong, is an exposure of Upper Silurian (Ludlow) formation, including a thin band of Aymestrey Limestone (Geological Map LV., N.E.). This detached Silurian rock, one furlong in width, is a little more than one mile in length.

A further ride of four miles brings us to Cleobury Mortimer Station, 15 miles from Woofferton, into the Coal Field of the Forest of Wyre. In the short distance of 17 miles from Woofferton to Wyre Forest there are five intermediate stations.

From a paper on *The Forest of Wyre Coal Field*, by Daniel Jones, F.G.S., published for the Dudley Geological Society in 1894, we learn that many fruitless attempts to discover coal of a productive character had been made at great cost in the borings at the Town Mill, Coventry Mill, and near Furnace Mill, all three of them near the Dowles Brook in the Forest of Wyre Coal Field. Mr. Jones had sections of borings from the Town Mill at 1,146 feet, near Furnace Mill at 804 feet, and from Coventry Mill, in which the coal bearing strata were entirely absent. The more valuable coal fields lie further north.

Wyre Forest railway station is in Worcestershire. As soon as our party had assembled Mr. Moore seized the opportunity of exhibiting several water worn pebbles which he had brought in a strong knapsack, and demonstrating upon the fact of the pebbles bearing typical characteristics of ice action in being smoothed, polished, grooved and scratched. They had been extracted by hand, from a depth of from 50 to 60 feet below the surface level, out of the Gravel Drift on the bank of the Midland railway at Stretton Sugwas, three miles from Hereford. Amongst the specimens was one from the Old Weir Bank on the Wye, an extension about one mile westwards of the same Gravel Drift.

Mr. Moore endeavoured to enlist the interests of the members in the study of the much neglected subject of our gravel beds and dried up river valleys, with the conviction that important discoveries would result therefrom, as he himself had witnessed.

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Upon the conclusion of Mr. Moore's address, the botanical section of the party advanced under the direction of Rev. A. Ley. The main party, conducted by Mr. Carleton Rea, President of the Worcestershire Naturalists' Club, commenced their rambles towards the Forest.

The Forest was entered at a gate about 200 yards west of the station. Crossing Dowles Brook, the boundary here between Worcestershire and Shropshire, we walked through Brand Wood and The Bank, skirting the left bank of the brook, to Furnace Mill. Here a halt was made for inspection of the picturesque Waterfall. Thence the ramble was continued over the open ground north of the Mill, overgrown with heath in glorious luxuriance.

Proceeding onwards along Breckneck Bank, a halt was ordered in order to await the arrival of stragglers. The next halt was in a clearing in the wood, in which were visible traces of the cuttings for the lines of syphons of the Water-conduit to Birmingham from the Elan Valley in Wales.

The line of the conduit exhibited a marked declivity westwards of more than 100 feet fall in the distance of about half a mile down to the Bavenny Brook in the Dingle, where there was a Wash-out Chamber; from this lowest point there was, upon the eastern side of the Dingle and brook, a rise, apparently of one hundred feet in the shorter distance of a quarter of a mile.

A detour northwards of about one hundred yards brought us to the largest Juniper tree in the Forest, a tree about 25 feet high, far beyond its prime, and exhibiting signs of decay in its lower branches.

From the Juniper tree we retraced our steps into the open ground, and recrossed the line of the Birmingham Water conduit. Here some of the party left the Forest and visited Cleobury Mortimer. The remainder continued their rambles southwards through Malpas's Wood, in which they passed through a large bed of Lily of the Valley; thence through Coachroad Coppice to a portion of Wyre Common, carpeted with heath in still greater luxuriance than was met with in the earlier part of the day, through which some of us waded almost waist deep. Crossing the railway eastwards of Cleobury Mortimer Station and extending our explorations upon the rising and more open ground on Hungry Hill, we met the Botanical Section, under the guidance of Rev. A. Ley, who gave us the results of their work as follows:—

The energies of the Botanical Members of the party were devoted almost exclusively to Brambles, August being the month during which their observation can be most profitably carried on. About 20 to 22 species of these plants were observed; among which two rarities, Rubus fusco-ater, W., and R. serpens, W., are abundant throughout the district visited. Two of the Suberect group, which is so rare in Herefordshire, R. fissus, Lindl, and R. plicatus, W. and N., were noticed on the heath, and in the heathy wood near Cleobury Station; also the rare variety,

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triangularis, Ley, of R. dumetorum, W. and N., recently described by Rev. A. Ley in the *Journal of Botany* (see *Transactions* 1900—1902, p. 237). It is clear that the Forest is very rich in Bramble forms, and merits more than a cursory days' examination, especially with a view to the record of these plants in the two counties of Worcester and Salop, the boundary of which runs through it. The ground examined to-day by this botanical section lay exclusively within the latter county.

The day was unfavourable for Entomologists owing to the absence of the sun. In the open glades of the forest the brimstone butterfly (Gonepteryx rhamni) was seen, the bright yellow of the wings being very conspicuous. A few fritillaries were noticed, much worn, and consisted of two species, Argynnis paphia and Aglaia. The Vanessidæ were represented by Vanessa Io, Atalanta, and Urticæ, and were fairly numerous. The common blue (Polyommatus Alexis) was met with on the margin of the forest in very limited numbers. Time did not permit of beating for moths, but a rare "Plume" was disturbed, and was captured by Mr. Carleton Rea. The President took a larva of Dicranura furcula on aspen.

The following birds were observed: Several specimens of the Green Woodpecker (Gecinus viridis), Common Heron (Ardea cinerea), Red Grouse (Lagopus scoticus).

Only one adder, or may-be phantom adder, was seen, notwithstanding that several Members made diligent search for them. Members were forewarned in the programme to wear gaiters, as adders were numerous in the Forest.

One deer was seen. There are several in the Forest which have escaped from a neighbouring park.

CLEOBURY MORTIMER CHURCH.

By Robert Clarke.

The Church, dedicated to the Blessed Virgin Mary, consists of a nave, with north and south aisles, chancel, and two chapels, one in the north side, and the other and smaller chapel in the north side of the chancel. It has a tower at the west end, and a porch on the south.

The lower part of the tower facing east has a fine Early Norman arch opening into the nave, partly restored; the piers are very much bulged inwards at the bottom. The original stone seat remains at a much higher level than the present nave floor. The west face of the tower is in the Early English style, and has a singular recessed arch inside, which may originally have opened outwards towards the west.

The belfry windows above are Transitional, or very Early English in character. The spire is of wood covered with shingle, and very much contorted in its upper part.

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The nave is separated from the aisles by five bays of good Early English pointed arches. The clerestory windows above are quite plain and square headed, probably lowered when the existing roof was put on. This is in the Decorated Period, with projecting wood corbels carved and moulded, carrying a barrel-shaped roof above, but not panelled. The well moulded principals and cusped braces are in sight. Judging from the remains of a high pointed gable on the east face of the tower, the nave may have had an earlier roof than the present one. The north and south aisles have lean-to roofs. The two eastern bays on the north side are widened out to form the north chapel. This roof is now plastered. A piscina is in the east wall.

The chancel arch is a fine specimen of Early English work, with well moulded and carved work in the arches and capitals.

The chancel has Early Decorated and Perpendicular windows, with a priest's door in the south. A piscina in the east wall. The roof is well moulded and of the same style and character as the nave, but rather flatter, and only barrel shaped in the upper part.

There is a small chapel in the north side with a low hagioscope looking direct to the altar.

The porch is large, with well moulded Early English arch on the outside and a fine Early English doorway into the Church. There is a rudely carved holy water stoup, with a grotesque face on the exterior, in the right hand corner. Very few remains of antiquarian memorials are in the Church. An incised coffin lid with a lozenge shaped cross on its surface is now in the tower, and an old stone coffin now against the north wall of chancel outside.

The Church is built on ground sloping downwards from the west to the east, and also from the north to the south, which gives the interior a very singular appearance.

Of the old churchyard cross, on the south side, only a portion of the shaft and one stone of the base step now remain.

In the Churchyard were observed some tombs of the family of Beddoe.

The chancel east window of three lights has been filled with stained glass, with subjects from the vision of Piers Plowman. It is erected to the memory of William Langland, poet, who was born in Cleobury Mortimer. On the glass is the following inscription :—"In memory of William Langland, poet, born about 1332, died about 1400, who sang of Jesus Christ in the Vision of Piers Plowman. Do well, do bet, do best."

It is interesting to know that another Early English poet, Layaman, 1200, lived about ten miles from here, at Arley Kings, near Stourport. The present rector, Rev. D. Vawdrey, discovered in a rockery on the lawn the base of the old font, and on putting it together

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found the following inscription cut in on the upper chamfered edge, with only one letter partly obliterated, Y: "Tempore: La(y)amanni, Santi." The poet Layaman, who died in 1200, has left on record that he was the priest of Earnley by Severn. Earnley may have been the early name of Arley Kings.

The late Rev. Dr. Havergal, of Hereford, one of our Members, interested himself in the remains, and restored the base of the old font to the Church again, with a new bowl, making good the missing one.

Layaman was about the first English poet to break away from the conventional style of Anglo-Saxon poetry and Norman-French into the early form of the present English language.

In the next following century William Langland made a further advance in his vision of Piers Plowman.

CLEOBURY MORTIMER CASTLE.

Since our visit "Memorials of Old Herefordshire," edited by Rev. Compton Reade, has been published. On page 73; the Rev. A. T. Bannister in his paper "The Border Castles of Herefordshire," after treating of the multitude of castles, including unlicensed castles (*castra adulterina*), built all over England during the turmoil of King Stephen's reign, informs us that, according to some accounts, Henry II. on his accession (1154) "dismantled no fewer than 1,115 of these castles in all, having to capture some of them by force. Thus Hugh Mortimer refused to surrender Cleobury in Shropshire, and it was only destroyed after being besieged by Henry in person."

The site of the old castle is close to the Church. Half a mile to the north-east is a Castle Toot, such as we became familiar with at Almeley as a "Watch place" See *antea* page 233. There is also "Castle Twts," (*sic*) near Hergest Court in Herefordshire, Sheet XVII, S.W., two miles south-west of Kington.

At about 5 p.m. a few of the members assembled at a small inn called Blount Arms, close to Cleobury Mortimer railway station, where the following papers were read:—

Notes on the Herefordshire Domesday, by Rev. A. T. Bannister; *Drifts in the Wye Valley*, by T. S. Aldis, H.M. Inspector of Schools.

REFERENCES.

In August, 1897, see *Transactions*, 1897, pp. 293 seq., the Woolhope Club detrained at Wyre Forest Station, and explored the Forest in an easterly direction towards the river Severn and Bewdley.

References to Wyre Forest will be found of frequent occurrence in the pages of the "Transactions of the Worcestershire Naturalists' Club," which volumes are in the Woolhope Club Library.

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The Ordnance Maps for the district are :—

On the scale of 1 inch to 1 mile. Sheet 182.

On the scale of 6 inches to 1 mile. The two following maps, price 1s. each, include the whole district named.

Shropshire Sheet LXXIII., S.E., in which is given the course of the Aqueduct of the Birmingham Water Supply from Wales.

Shropshire Sheet LXXX., N.E., and Worcestershire parts of Sheets VII. and XIII. This map includes the whole district from Wyre Forest Station to Cleobury Mortimer Station.

The Geological Survey Map is No. LV., N.E., giving the Coal Measures of Wyre Forest as far north as Upper Arley in the East, and Kinlet in the west.

The Geological Survey Map LXI., S.E., should also be studied.

The New Index Map Geological Survey, Sheet 8, on the scale of 4 miles to 1 inch, price 2s. 6d., comprises a large field of the geology of central England and north-eastern parts of Wales. Sheet 11 covers a large area of the west of England and south-eastern parts of Wales.

Here follows a list of the attendance of members and visitors :— Mr. T. Hutchinson, President; Mr. Carleton Rea, President of the Worcestershire Naturalists' Club; Revs. C. H. Binstead, P. H. Fernandez, Preb. W. H. Lambert, A. Ley, H. Somers-Cocks, and H. Williamson. Dr. A. E. Boycott; Messrs. S. H. Bickham, C. P. Bird, W. J. Boycott, J. U. Caldicott, R. Clarke, T. J. Cook, L. Davis, E. A. Gowring, F. S. Hovil, J. Lambe, J. Probert, W. H. Steward, R. A. Swayne, H. A. Wadworth, H. Cecil Moore (Honorary Secretary), and James B. Pilley (Assistant Secretary).

Visitors : Rev. E. Owen, from Carmarthen; Messrs. D. N. Campbell, G. C. Campbell, G. A. Davies, from Liverpool; and R. Somers-Cocks.

THE HEREFORDSHIRE DOMESDAY.

By the Rev. A. T. Bannister, M.A.

The Herefordshire Domesday, according to Mr. W. de Gray Birch's Bibliography is one of the two – the other being that of "sleepy" (or is it "silly?") Suffolk—concerning which no literature exists, not even an article in the "Proceedings" of some learned Society. I have put together the following fragmentary notes—a complete study would require as many weeks devoted to the work as I have given hours—in the hope that some competent student, with more leisure than I have, may be induced to undertake a monograph on the Domesday of our county.

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(*a*) THE DOMESDAY HUNDREDS OF HEREFORDSHIRE.

King Alfred, according to the oft-repeated story, is said to have originated the division into Hundreds; and whether this be so or not, the Hundreds certainly date back to a period long before the Survey. We cannot, of course, go into the much-disputed question as to the original basis of the Hundred—whether, that is, it contained a hundred hides, [1] or a hundred villages, or a hundred families. The names of the Hundreds were evidently taken from the spot which afforded the most convenient meeting-place.

Our county, in the Survey, contains 19 Hundreds, together with the district of the Golden Valley, which is once referred to as Stradel Hundred, but is usually called Vallis Stradelei. Under the names of one or two Manors, as Clifford and Eardisley, we find the entry, Non subjacet alicui hundret neque in consuetudine. [2] Another entry tells us that Chingestune is in Gloucestershire, but qui ibi manent in isto hundret (*i.e.*, Bremesese) ad placita conveniunt.

The Hundreds seem to have varied considerably in the number of Manors they contained. Dodintret, Lene, Naisse, Sulcet, and Wermelau contained only one Manor each; Tragetreu has only Hope and Capel, while others contain twenty or even thirty names. Bromesese or Bremesse (throughout the Survey the spelling of place names varies considerably) included Ross, Eton (Tregoz), Linton, Upton (Bishop), Weston (under-Penyard), and eleven other places, together with Chingestune and four other Gloucestershire Manors. Cutethorne is a very perplexing Hundred, which seems to have run through the whole county from north to south: it includes Auretone (Richard's Castle) and Ludford in the north, Pipe and Lyde, Credenhill, and Sugwas, in mid-Herefordshire, and Ewias in the south; in all twenty Manors. Dunre contained Moccas, Holme Lacy, Clehonger, and nine other Manors. Elsedune has Almeley, Titley, Dilwyn, Whitney, and twenty other names. Greitrewes includes Lugwardine, Kingstone Frome, and eight others. Hezetre contains thirty-six names, of which I can identify, for certain, only Wigmore: two places, Westune and Cascope, are said to be in Marcha de Wales. Plegeliet contains Stanford, Bromyard, Sarnesfield, Leominster with its sixteen members, or berewicks, and eight other Manors. Redelau or Radenelau has Stretton, Cowarne, and twenty-five other names. Stapel or Staplesaet has Staunton, Kenchester,

1. Whether the hide be, in ultimate analysis, a measure, or merely a convenient fiscal unit, it is for all practical purposes equivalent to 120 acres. But our Herefordshire Survey offers special difficulties, since we find hidæ Anglicæ and hidæ Waliscæ. Not only did these, apparently, contain a different number of acres, but the holders also would seem to have lived under different systems of tenure. Thus, at Westwood, there are six hides. Uua ex his habet Waliscas consuetudines, aliæ Anglicas.

2 It would almost seem that the castelry of Ewias was partly at least independent of the Hundred (Cutestorn) under which it comes. Of some lands said to be in fine Ewias we are told Hæc terra non pertinet ad castellariam neque ad hundret. Lands not belonging to the Lord of Ewias are said to be in the castelry. Henry de Ferrars has duas masuras in castello: Roger de Henrico is entered as having three churches in the castelry; and another entry concerning certain lands of the Bishop of Hereford, runs De his IX hidis una pars est in Castellaria Aluredi Ewias et altera pars in defensione regis.

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Brobury, Wormesley, and ten other names. Stradford has Pion, Madley, Weobley, Tyberton, and fourteen other names. Thornlau, Tornelauues, or Tornelaus has Thingill, Felton, Marden, Amberley, Bodenham, and fourteen other names. Wimundestreu or Wimestruil has Bosbury, Cradley, Colwall, Coddington, and six others. Ulfegie, or Ulfei, has Lutelonhereford, Yarpole, Croft, and fifteen other names. Lastly, in Valle Stradelei we have Bacton, Poston, Wilmaston, and thirteen other places. From these details one can roughly construct the map of Herefordshire as divided into Hundreds at the time of the Survey, though in places the Hundreds seem to run almost through one another.

(*b*) THE DOMESDAY TENANTS OF HEREFORDSHIRE.

At the time of the Survey the King held in his own hands some thirty Herefordshire manors, including Leominster, [3] and the district of Archenfield. The Bishop of Hereford held nearly twice as many manors: the Abbeys of Cormeilles, Lira and Gloucester, and the Canons of St. Guthlac a few manors each. The rest of the county was in the hands of thirty-two tenants-in-chief, ranging from great Norman lords, holding in the county as many manors as the king or even more, to small holders of one hide or even of half a hide, who yet held from the king direct. The largest holder, by far, is Roger de Laci, who has over seventy manors in Herefordshire alone: he is, indeed, at the time of the Survey, the tenth largest holder of land in the kingdom, having in all one hundred and sixteen manors. Other important Tenants-in-Chief are Ralph de Toni, Lord of Clifford, Ralph de Mortimer, Lord of Wigmore, and Hugo Lasne (called Hugo Asinus in the Worcestershire Domesday). Two large holders, Osborn Fitz-Richard, and Alured of Marlborough, are among the few Domesday tenants whose title dates from the time of the Confessor. The former still holds in the Survey the lands which his father, and, later, he himself, had held T.R.E. (Tempore Regis Edwardi, *i.e.*, the Confessor), and Alured of Marlborough holds the Castelry of Ewias which his uncle, Osbern Pentecost, had held. [4] Nigel Medicus, the Conqueror's physician, holds nine manors. "Grifin, son of King Mariodoc," holds seven manors. [5] Raynerius Carpentarius (an important trade, whose range of work was far wider than would now be included in the term carpenter) holds one manor; and one woman, "the wife of Ralph the Chaplain," has two holdings.

3. Leominster is one of the most important of all the manors in England, at the time of the Survey—only Berkeley, Tewkesbury, and Taunton can pretend to rival it in size, population, and value. It contained with its 16 members, 80 hides. There were eight Bailiffs, eight Radknights, 16 Beadles (note the symmetrical arrangement), 238 Villans, 75 Bordarers, and 82 male and female serfs. These had in all 230 teams, and there were 30 more in the demesne.

4. Albertus Lothariensis, who holds one Herefordshire manor in the survey, had held one in Bedfordshire T.R.E. At the end of the Herefordshire section are two small holders, Edric (1½ hides), and Elmer (half a hide), tenants-in-chief, who are said to be holding from the king the land they held before the Conquest. For what services these two obscure holders (evidently not Normans, as were Alured and Osbern) were allowed to retain their lands we are not told.

5. The curious form "Mariodoc" is very possibly a mistake for "Caradoc," the Welsh prince who leagued himself with Earl William Fitz-Osbern in 1070. It would therefore be quite natural that his son should receive a grant of Land in Herefordshire.

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The under-tenants of Herefordshire were two hundred and eighty-two in number, and 5,049 other inhabitants are definitely mentioned,[6] of various conditions and occupations, mainly Bordarers (1,417) and Villans (2,124).[7] There are about seven hundred Servi, and one hundred Ancillæ, seventy-one Rachenistri (Radmans, Rad knights, freemen who served on horseback), 44 Prepositi (Bailiffs), forty-three Priests,[8] 24 Fabri (smiths), 21 Beadles, a few Forestarii, Vaccarii, and Porcarii, one Carpentarius, one Miller, and one Custos Apium. At Leominster is a certain Lewin, described as a Latinarius or Latinist, which probably means an "interpreter" generally. No thanes (taini) are to be found in Herefordshire, but one entry (under Getune) says Hæc terra fuit tainland T.R.E. sed postea conversa est in reveland. All the above-mentioned tenants would seem to have been Anglo-Saxons, since we find separate mention (though numbers are not usually given) of Francigenæ and of Walenses.

(*c*) THE DOMESDAY CASTLES OF HEREFORDSHIRE.

Domesday is peculiarly capricious in its mention of Castles (as also of Churches), and some at any rate are omitted which are certainly known to have been in existence at the time of the Survey. In all fifty Castles are entered as then existing in England, together with two domus defensabiles. Of these, seven Castles and both the domus defensabiles are mentioned under Herefordshire, though two of them, Monmouth and Caerleon, do not come within the limits of the county as defined in later times.[9] Of the rest, Auretone (Richard's Castle) and Ewias (Harold) were already in existence before the Conquest. Clifford, Ewias (Lacy) and Wigmore were built (and Ewias Harold re-built) by William Fitz-Osbern, during the four years of his strenuous rule of the Border. It is only by a careful study of Domesday that we can understand how much he did in this short "reign," for it can almost be so called, since the great Viceroy was to all intents and purposes an independent sovereign. His name, in the Herefordshire Domesday, is mentioned almost as frequently as that of the king. He takes lands from one manor and gives them to another. Everywhere he grants lands and tithes to his two monastic foundations of Lira and Cormeilles. He builds and re-builds castles, gives manors to whom he will,[10] and recasts the "laws and customs," of Hereford in favour of his French men-at-arms.

6. Professor Maitland considers that we should make a fair estimate of the whole population at the time of the Survey if we multiplied the numbers recorded in Domesday by five. This would give the total population of Herefordshire as 26,840.

7. Both Bordarii and Villani are un-free labourers, but the Bordarii are in a less servile condition than the Villani, who, in their turn, are in a condition above that of the Servi (actual bondsmen).

8. The parish priest does not seem to have held a very exalted position at the time of the Survey, being usually classed with the inferior tenantry. The following entry (under Ross) is typical, Ibi xviii. villani et vi bordarii et presbyter.

9. So the Castle of Rhuddlan is referred to under Cheshire, where it is stated to possess leges et consuetudines quæ sunt in Hereford et in Bretuill.

10. In one entry only, that of Edresfelle, are we told that Fitz-Osbern exchanged a manor instead of taking it. It had belonged to Reinhold, the Chancellor, a man well-nigh as important as himself.

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Of the Herefordshire castles in Domesday, Ewias (Harold) is evidently the most important, and its "castelry" the most extended. Clifford, Wigmore, and Auretone are all said to be "waste" (*i.e.*, paying no geld), though the two former seem to have had a little "borough" at their gates, since burgesses are mentioned in connection with them. There were no burgesses in Ewias, but Alured of Marlborough is said to have five burgesses in Hereford. The two domus defensabiles are Eardisley, held by Roger de Laci, and Walelege,[11] held by Gilbert Fitz-Turold.

(*d*) THE BOROUGH OF HEREFORD.

As in several other counties, the first page of the Herefordshire portion of Domesday gives an account of the chief borough or "port"[12] in the county, its inhabitants and their customs.[13] At Hereford there were 103 tenants within and without the walls.[14] The consent of the Reeve (Prepositus) was necessary, if a tenant wished to sell his holding ;[15] and the Reeve took each "third penny" of the price. When a burgess died, the king took his horse and his arms (for, unlike the burgesses elsewhere, the Hereford burgesses were fighting men, and, when called upon, had to follow the sheriff into Wales, or pay a fine of forty shillings). Each of the tenants paid for his holding seven pence half-penny, and fourpence towards hiring horses (ad locandos caballos), and rendered three days personal service of reaping at Marden in August, and one day of hay-making wherever the Sheriff directed. Anyone who was too poor to do his service might abandon his holding to the Reeve,[16] who would "take care that no house remained untenanted and that the king did not lose his rent." All who had horses went three times a year with the Sheriff to the County and Hundred Courts at Urmlauia. And when the king went to hunt, one person from each house went ad stabilitionem in silva.[17] There were six smiths in the borough, each paying one penny for his forge, and making 120 nails from the king's iron. There were seven

11. I cannot certainly identify this place ; but, for reasons which I have given elsewhere, I conjecture it to have been Willey, near Presteign.

12. The word "port" is probably the Latin porta (not, as some think, portus) or "gate." A.S. geat, German, gasse, Burgate (*i.e.*, burh-geat) would thus be rendered into Latin as porta burgi. It is certain that in Domesday "port" is simply equivalent to "borough," perhaps in the commercial sense of the latter word, rather than as the place which has a moot : *e.g.*, in Hereford port T.R.E. habuit Walterus episcopus C masuras. The word "borough" strictly means (a) the little knot of traders clustered for protection round a lord's castle : as at Wigmore, Clifford, or Rhuddlan. (b) a town, or burh, usually walled, which has a moot, and in which a market is held.

13. The special customs of Hereford, Shrewsbury, and Chester are set out at much greater length than those of any other Domesday boroughs.

14. Domesday mentions only walls in connection with the following boroughs :—Chester. Colchester, Hereford, Leicester, Lincoln, and Oxford.

15. Only at Hereford, and Torksey, in Lincolnshire, were burgesses allowed, under any circumstances, to sell their houses. But at Torksey, a burgess could sell his house and depart "without the licence and knowledge of the prepositus if he wished."

16. This seems to imply that the services were no light burden. It would suggest also that the Reeve was not an elected officer, but was directly accountable to the king. Usually the receipts of a borough were divided between the king and the earl. But at Hereford, Worcester, Droitwich, and Stafford the King held the whole city in demesne, and received the whole render.

17. This stabilitio is only referred to under Hereford and Shrewsbury. It seems to have been the driving of the deer from all quarters to the centre of a gradually contracted circle. Translate "making a cordon."

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moneyers (monetarii), one of whom was the Bishop's. On a recoinage, the moneyers paid twenty shillings each to the king, and the bishop likewise had twenty shillings of his moneyer. When the king came to Hereford, the moneyers were to make as many pennies of the king's silver as he wished. Each in return had the privilege of soc and sac. *i.e.*, the right of administering justice, and receiving the fines and forfeitures within a certain precinct. There were three reserved pleas of the crown, punishable by a fine of 100 shillings—pacis infractio or breach of the king's peace,[18] heinfara which, according to Sir Henry Ellis, seems to have been the flight from murder,[19] and forestellum or assault upon the high road. These were the customs of the borough in the time of the Confessor, and they were left unaltered after the Conquest, for the Anglo-Saxon burgesses. But William Fitz-Osbern introduced foreign burgesses (Francigenæ) to whom he granted the privileges which had been customary in his Norman Lordship of Breteuil. Of these privileges the most important was that the burgesses of French birth should not be fined more than twelve pence, save for the three reserved pleas.[20] These "Laws of Breteuil" spread to many places in the March: at Rhuddlan (in the Cheshire Domesday) we find them again with the three reserved pleas given as homicidium, furtum, et heinfara. The exact number of the Francigenæ at Hereford is not given. Nor is it clear whether the 100 houses of the Bishop are held by burgesses. Besides the king's burgesses, and the possible 100 belonging to the bishop, Roger de Laci had an unspecified number, paying him twenty shillings, and the Lord of Ewias (Harold) had five.

(*e*) SIDELIGHTS ON HEREFORDSHIRE LIFE AT THE TIME OF THE SURVEY.

The object of the Survey was to ascertain accurately the amount of geldable land in the kingdom, and to reform the assessment of the geld. But incidentally the Commissioners note many curious customs, tenures, and manners of living, some of which, from the Herefordshire portion, I have collected, as illustrating Herefordshire life in the days of the Conqueror. One of the most striking things in the Herefordshire Survey is the number of Manors which possess rights and interests in the Worcestershire salt. How the various Manors acquired those interests is not told; but entries are quite frequent

18. In Domesday a king's borough enjoys a sort of sacro-sanctity; all who come to traffic there are under royal protection; therefore an outrage committed upon them is a direct offence against the king himself.

19. The only passage in all Domesday which seems to throw any light on this obscure crime is in the account of the consuetudines Walensium in Archenfield; si quis occidit hominem regis et facit heinfaram dat regi XX solidos de solutione hominis. Some conjecture that Heinfara is house-breaking making et equal aut in this passage.

20. It would almost seem that these Francigenæ paid no geld. For, in the Shropshire Domesday, we find the English-born burgesses of Shrewsbury complaining that it is very hard upon them (multum grave sibi esse) that they have to pay the whole geld for the borough as in the Confessor's day, although the Earl has taken for his castle 51 houses, and other 50 are waste, and 43 French burgesses hold houses which used to pay geld, and the Earl has given to the Abbey, which he has founded, 39 burgesses who used to pay geld along with the others.

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that the manor has one or more Salinæ at "Wich." Marden obtains IX summæ[21] of salt each year, Marcle obtains 60 mittæ, Leominster 30. To Ledbury belongs pars salinæ in Wich, and Haleode habet iiii salinas et unum hochum. Iron is worked at Turlestane (a member of the Manor of Marcle) where one hide rendered 50 massæ, and at Alwintune, which rendered twenty blomæ.[22] Fisheries are frequently mentioned, especially of ells, which are reckoned by stiches or sticks, each stick having 25 ells. Rents were often paid in sticks of ells, as by certain holders at Leominster. Salmon is very rarely mentioned in the Survey, and only as coming from the Severn and the Wye. Turlestane rendered VI salmones. At Dunre we find the fishing already carefully preserved in aqua ubi nemo piscatur sine licentia. Roger de Laci also habet in Waia piscariam quæ appreciatur VI lib. The curious laws of the Welshmen in Archenfield, lege Walsensi viventes, I have translated in full elsewhere,* and the customs of the borough of Hereford I have described in the previous section. It would be impossible to enumerate the various tenures by which land was held, as they varied for almost every Manor. Some lands (as at Linton, and throughout Archenfield, and by certain Welshmen in Ewias) were held on payment of so many sextarii of honey. At Kingstone the tenants carried the king's game to Hereford, and rendered no other service save fifty shillings de candidis denariis and one hawk. At Lene it was the custom for the Bailiff, when the Lady of the Manor came to the Manor, to present her with 18 ores of pennies "that she might be in a good humour" (ut esset ipsa læto animo). Eight Welshmen at Becce in the Golden Valley reddunt unum accipitrem et duos canes.[23] Lest this should seem a trifling payment, we are told, in another entry, that a well-trained hawk is worth £10 (equal to about £300 of our money). At Leominster there is an airea accipitris, where hawks are bred and trained; another at Forhelmentone (in Gloucestershire, though mentioned under Herefordshire). There is a market at Eton (Bishop), the only one actually mentioned in the County, though there must have been others. Haiæ (enclosures for catching wild animals) are frequently mentioned in Herefordshire, and occasionally in the neighbouring counties of Worcestershire, Shropshire, and Cheshire, but scarcely at all elsewhere.[24] Once (under Weobley, then held by Roger de Laci) we find the entry ibi est parcus.[25] At Weobley, Marcle, and Leominster, there are entries

21. Summa is a pack-load; mitta is about eight or ten bushels; hochus is a small salt-pit or reservoir.

22. Blomer is a pig of iron about two feet long; massa seems to be much the same in meaning as bloma.

* History of Ewias Harold, page 101.

23. Cheltenham, in Gloucestershire, pays 3 000 dog biscuits (ter mille panes canibus) reckoned as being worth sixteen shillings.

24. The word haia means primarily a hedge; it means in Domesday an enclosure, capreolis capiendis, as one entry defines it. Another form of the word is haga, which is often found in Domesday, meaning a house standing in an enclosure. An Anglo-Saxon charter in Kemble's Codex Diplomaticus grants a villam quam nos Saxonice an haga dicimus.

25. Only 16 of the Tenants-in-chief in England held parks. Some of these were of considerable extent; and the owner held a licence from the king to keep, within the enclosure, the feræ silvaticæ.

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referring to Essarz—probably among the earliest notices we have of such clearings. Another entry mentions certain acras terræ nuper aratas. Pannage, or the right of feeding pigs in the woods, is often referred to. At Leominster every villan who had ten pigs gave one for the pannage of the rest. It would be interesting to investigate the distribution of Churches in Herefordshire at the time of the Survey, but the actual references to Churches are very scanty, though probably one may presume the existence of a Church when a Priest is mentioned. Under Leominster no less than six Priests are mentioned; there were two at Lege, three in Archenfield (whose duty it was "to carry the king's message to Wales"), and one each in 32 other Manors.

DRIFT IN THE WYE VALLEY.

By T. S. Aldis.

The county of Durham affords special facilities for the study of Drift, for through the coal mines the interior of the earth is as well known as the surface. Miners had long been familiar with the interruption to their work caused by faults, and had learned from the slope of the fault to know where to look for the interrupted seam. Durham, however, presented a new experience. As the miner ran his drift through a coal seam, suddenly the seam, the rocks above, and the clay below, came to an abrupt end in a confused mass of gravel or clay with embedded stones—the Drift. This came to be called the Wash. Accumulated observation showed it to be no irregular gap, but a huge trench, near Durham, roughly corresponding to the Wear Valley, but continued down the Team Valley into that of the Tyne. It is none other than the valley of erosion of the Wear as it existed in pre-glacial days.

The sea levels were lower then than now, as at Newcastle the bottom of this huge trench is some 200 feet below the present level of the sea.

So completely was this valley filled up by the glacial deposits at Chester-le-Street that the Wear was diverted over the eastern watershed into one of the narrow ravines formed by a small stream in the magnesian limestone, and now finds its way by a post-glacial course past Sunderland to the sea.

It is hard to think of our land as covered like Greenland with glaciers. The Ice Age involved not a simple but a very complex process. But, whatever changes took place, one thing seems probable that the bulk of the drift was shaped during the last retreat of the glaciers. Had they retreated uniformly the surface would have been evenly covered with drift, or at least the moraines would have been left as even embankments all along the valleys. But the retreat was not uniform. Sometimes the glacier was long stationary, and then the

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moraines accumulated in huge mounds. Sometimes colder seasons made the glacier advance, and its foot piled up the accumulated rubbish of many years in a huge dam across its path. Sometimes the glacier retreated rapidly, and then the original valley was left but little encumbered.

The gradual retreat of the glaciers thus left our ancient river valleys dammed across at irregular intervals with mounds of drift of varying size and texture. The river itself became a chain of lakes. The overflow of each lake gradually wore a gorge through the barrier below it, whilst the material thus removed helped to fill the lake below. The old valley in many parts has at last been half filled up and the river has levelled the surface off the alluvial flats.

But in some cases the barrier thrust up by the advancing glacier rose above the edges of the original valley of erosion. This obviously occurred at Durham. A huge mound of drift blocks the old valley, the street down it bearing the appropriate name of Claypath. So high was this originally that it forced the river to make a detour, cutting a huge horse-shoe shaped course on the rocky plateau that bordered the original Wear Valley. This dam of Claypath, though it has been much denuded, has effectually kept the Wear from its old course, and compelled it to cut down the gorge which surrounds the Cathedral and Castle of Durham.

This gorge represents the erosion of the Wear in post-glacial days. It is, as far as my memory serves, about one-thirtieth of the old Wear Valley in section.

Some few miles above Durham another dam was formed by the glacier across the old Wear Valley. This time the stream was forced over on to the eastern plateau, and began to make another gorge in the solid rock. When, however, it had cut less than 100ft. in depth, the dam across the original valley was worn through, and the deserted gorge was left as a curious shoe-shaped ravine isolating a small mound of rock. Through one arm of this the line from Ferry Hill to Durham now runs.

But whilst the Wear is the horn book in which we can easily spell out some of the changes caused by the glaciers, countless other instances of obvious change can be found. Thus the Derwent originally flowed out past Filey. Now a huge boulder clay barrier has stopped its way there, and driven it right back over the Castle Howard Hills into the Ouse.

Thornton Force and Catterick Force near Ingleborough are both instances of streams that have been driven from their ancient ravines by dams of boulder clay, and after wandering awhile over the bordering plateau fall headlong over its edge into their original ravines below the dams.

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Can corresponding changes be seen in the Valley of the Wye? A somewhat cursory survey of its course suggests that this is the case.

Standing on Bredwardine Bridge and looking westwards, we see a remarkable ridge running out towards us from Meerbach Hill. Its two highest points are crowned with trees, and the ridge with these two tumps forms a beautiful feature in a noble landscape. Its sides are extremely steep, and its eastern foot projects so far as to have thrust the river against the low cliff on its left bank. If this ridge be really drift, as it appears to be, it is the lateral moraine of the great Wye glacier. Mr. Matthews, the master of the Bredwardine Endowed School, kindly went over the ground for me. The rock outcrops he showed me tally with this idea. Parts of this moraine appear to stretch right over the river to Brobury.

Further, a huge mass of drift extends through Norton Canon southwards to Staunton-on-Wye, and round westwards towards Brobury. Its position suggests that after the glacier had retreated, probably to the west of Letton, a cold period came on, and the glacier again advanced. Following the line of least resistance, it drove before it a huge mound of rubbish represented now by the drift above mentioned. The glacier afterwards retreated rapidly, leaving Letton Lake unencumbered. If we assume that the glacier in this temporary advance rose as high as the top of Meerbach, its extension to Norton Canon would give a slope of one in sixty—not an unreasonable one.

For a long time whilst the river was washing over the moraine matter, and separating out the deep sand deposits at Staunton, the lateral moraine kept the Wye from its old bed between Brobury and Bredwardine. The narrow passage it has worked through this shows how comparatively recently the river has regained its former course.

It is well for us to remember the great difference between a Durham glacier flowing through a well defined valley eroded out of a table land, and a Herefordshire glacier flowing across a plain studded with hills. The low land of Herefordshire would be covered with ice, through which the glacier would push its way as a declining ridge of ice, and the lower bordering icefields would check the spread of the moraine. When the ice finally melted, the moraines would be left as lines of very irregular hills hemming in the Wye, and damming up many of the Wye tributaries into deep lakes. When the Wye was busy working down the moraine between Brobury and Staunton-on-Wye, the present Wye Valley about Moccas was a deep lake, the Blakemere in fact.

We must not think of the action of the river in working over the moraines as very energetic. Probably the whole county was largely a lake irregularly broken by islands, some ancient hills, others moraine heaps. The river wound its way leisurely, removing the clay, shifting the sand, and smoothing the pebbles. Every bed of rolled stones tells of a level at which the river once flowed.

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But whilst the glacial deposits at Bredwardine are the most obviously convincing, the huge masses of drift around Hereford are really more important. It is when a glacier flows by the side of an over-topping hill that the moraine assumes larger proportions. Meerbach fed the moraine at Bredwardine, but Ladylift, Mansell Hill, Credenhill, then much loftier than now, fed an enormous moraine which stretched apparently right across the Lugg Valley. The finest section is seen in the cliffs below Old Weir. The huge mass of Drift some 50ft. high is being washed away by the river, and the larger stones left at the foot check the stream, and effectually turn it southwards towards the narrow valley that receives it at Eaton Bishop and forwards it past Breinton.

The most interesting section of this Drift is seen in the great gravel pit in Stretton Sugwas, close to the railway. The upper parts have been washed over by the river, but underneath the gravel there seems to be a bed of true boulder clay, the embedded stones not scratched* but polished.

The huge masses of Drift were easily worked over by the river. The clay was readily washed away, the harder fragments, less readily transported, were washed down into huge deposits of gravel such as that on which Hereford itself stands, or the bed of gravel by Rotherwas, which forms so marked a rapid in the Wye. These beds of gravel, judging by what we see of the action of the river on the cliff at Old Weir, must represent all that is left of hills two or three hundred feet high. During this process for a long time probably the general course of the Wye was through Stretton Sugwas, Widemarsh Common, Barr's Court, and so into its present valley. Just as at Bredwardine Bridge, the narrowed valley of the Wye shows that it has but recently regained its old course, so with the river at Belmont. The way in which the Wye is penned up against the cliff under Belmont shows that it is only in comparatively recent times that the Wye has been there engaged in clearing out its pre-glacial valley.

One other curious memorial of those chaotic days should be referred to. A long tongue of Drift stretches from Tupsley through Hampton Bishop towards Mordiford. Westward of Hampton Bishop this is crossed by a curious valley now dry. It is about a quarter of a mile wide, and so must have taken the Lugg some time to excavate. The present valley of the Lugg by Mordiford was then probably filled up with the huge deposit which can be traced in the sides of the hills above. Possibly much of this is not original moraine matter, but a silt derived from the washing over of the moraines by the river.

If it be permissible to recapitulate, we can go back to the time when the British Isles were covered with ice to a depth probably of thousands of feet. We must not forget that ice is not water. The narrow gorges through which the Wye passes from Symonds Yat to Chepstow

* See the last paragraph on the following page.—H.C.M.

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easily drain the county of water, but could not free it of ice, and Herefordshire was probably occupied by a mass of comparatively stagnant ice of great depth, which would act but little on the surface of the ground and leave few traces. It would not be till the lower parts of the country were cleared that there would be much easterly movement set up.

This would give rise to boulder clay such as we see at the bottom of Stretton Sugwas gravel pit. As soon as Lady Lift, Credenhill, and Mansell Hill rose above the wasting glacier the transport eastwards of their crumbling summits would begin. Thus the huge deposits of Drift around Hereford were formed.

We can well suppose that after a long continuance of the glacier in a comparatively stationary condition, warmer weather brought on its rapid retreat to Bredwardine. Then a colder age caused it again to advance, pushing the rubbish before it to form a ridge southwards from Norton Canon. During this advance the lateral moraine above Bredwardine was formed. Then a warmer age succeeded, and the glacier rapidly retreated back to Hay.

The story of this final destruction of this Ice Dragon by the Champion Sun, with its thrilling episodes of advance and retreat till the bones of the monster at last wasted away in the wildest recesses of the mountains is recorded in the upper valleys of the Wye. It cannot be read in our library.

Thus a very imperfect summary of Drift deposits in the Wye Valley must be closed. If it be thought presumptuous to have attacked so large a question with so limited a knowledge it may be urged that the refutation of crude theories is often the means of solid advance in scientific inquiry.

Emphasis was given to the reading of the paper by the production by Mr. Moore of several large stones taken from the Stretton Sugwas gravel pit above mentioned. They were found embedded in boulder clay, sixty feet below the ground level, and they exhibited the characteristics of ice action, *e.g.*, polishing, smoothing, grooving, and scratching.

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DRIFTS IN HEREFORDSHIRE AND EVIDENCES OF ACTION OF LAND ICE.

By H. C. Moore.

Notes on Drifts in Herefordshire, by Mr. T. S. Aldis, call to my mind a paper by the late Rev. William S. Symonds, F.G.S., in the *Edinburgh New Philosophical Journal*, New Series, No. 28, Vol. 14, No. 11, October, 1861, under the heading "Phenomena connected with the Drifts of the Severn, Avon, Wye, and Usk." The paper is amongst the collection in the Hereford Reference Library, but as it is not easy of access at all hours to our Members, the following quotations are given :—

On page 284 Mr. Symonds writes :—"Mr. Prestwich has convinced me that certain drifts and gravel beds above the Avon, Severn, and other rivers, which he designates as *low level drifts* are altogether antecedent to, and independent of, the detritus which fills up the beds of the former lakes. They belong to an epoch, and represent an entirely different water surface. Instead of dipping under or into the lacustrine deposits, in many localities they dip away from the old lake silts and are slightly upheaved. They are, in fact, the relics of broad, and probably rapid rivers, of which the former channel must have been 30 or 40 feet above the level of the silted-up lakes.

The period of the "low-level drift" was then anterior to that of the Lake epoch in this part of England; and it is in these beds that the explorer finds such numerous relics of the extinct mammalia. . . . Page 285: It is in these beds, or in their equivalents, that M. Boucher de Perthes, Sir C. Lyell, Mr. Prestwich, and many other geologists, have detected flint implements. . . . . .

These beds are well developed near the Avon at Bricklehampton, and Cropthorne, at Upton on Severn, and near the Oxeye Gate, about a mile from Tewkesbury, on the Ledbury high road. Near Worcester they may be seen in various localities, ranging above the margins of the former lakes.

I find these drifts also well developed on the banks of the Wye near Hereford, and on the road to Hay.

At Brecon I found a most interesting old river margin of well stratified sand with rolled pebbles, on the slope of a hill, and at a height of 50 or 60 feet above the river Usk. The locality is Heolhir, or the long lane, a little way south of Llanfaes. . . . . .

I would finally call attention to certain gravels and drifts which are found *at a much higher level* above the river courses than the drifts

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alluded to. These gravel beds cap the summits of very considerable hills in the vale of Worcester. . . . . They are found along the flanks of the Malverns, where they have yielded the remains of *Elephas antiquus* and *Rhinoceros tichorinus*, &c. . . . . A fine molar tooth of *Elephas antiquus* has lately been found by Henry Brooks among the gravel which overlies the great masses of angular blocks heaped against the side of a hill known as Clinchers' Mill Wood, near Ledbury.

I have also observed the *high-level drift* at several points in Herefordshire, the principal of which is an excellent Section, near the Kite's Nest, on the Hay road, about four miles north of Hereford."

This reference, made forty-three years ago, to a Section near Kite's Nest, corresponds very closely to the exposure of fifty feet of Drift on the left bank of the Wye at the Old Weir, to which our attention was specially drawn by Mr. Aldis. It is an extension westwards of the Drift close to the Midland Railway, three miles on the line to Hay, on the left hand, close to Stretton Sugwas Church, which at the present period exhibits a gravel quarry rising fifty to seventy or more feet in height, at its greatest point, which contains sub-angular stones, smoothed, polished, and sometimes striated, indicating water and land-ice action, more or less promiscuously interspersed as if carried and deposited pell mell through the mass. At the base of the gravel Drift is a limited extent of "till" or "boulder clay" similar to the pulverised material at the base of glacial moraines which have been subjected to intense pressure of the superincumbent ice.

Occasionally a huge block of stone is imbedded in this gravel Drift such as could hardly have been moved into its position except by the action of ice or by an unusually formidable deluge of water. A block of Old Red Sandstone, which has recently been demolished by the quarrymen, measured five feet long, and about three feet wide and three feet deep.

A curious feature about this block was a bleaching action of its upper two-thirds; the pulverised dust made by the quarrymen's tools was perfectly white. Moreover, the lower third not only was red in colour, but was more angular and irregular, indicating a long period of burial. The whole appearance was strongly suggestive of its having been exposed for ages upon some hillside after the manner of a "perched block" deposited by a melting glacier.

The gravel Drift at Stretton Sugwas presents every indication of a fluvio-glacial deposit of a morainic character.

The surface formation of the neighbouring district is alluvium covered with post-glacial detritus from the erosion and disintegration of Old Red Sandstone from surrounding eminences. In the gravel Drift, however, polished stones of the Silurian formation with traps, cherts, and slate-like fragments from the upper reaches of the Wye are associated with rolled stones of the Old Red Sandstone. Here are specimens of

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each formation, which have been buried for unknown ages, presenting all the characteristics of ice-action, namely, polishing, smoothing, grooving, and scratching.

I here exhibit to you a smoothed stone containing a fossil of the Silurian formation, similar to one of the curved forms of Serpulites longissimus of the Upper Ludlow formation, and exhibiting the glacial characteristics of marks by scratchings, which has been during the previous week extracted by the Rev. H. E. Grindley from the Drift exposure on the banks of the Wye at the Old Weir Cliff.*

The late Mr T. Curley, C.E., F.G.S., fifty years ago informed us that the city of Hereford stands upon a bed of gravel 900 acres in extent. The northerly suburb called Widemarsh is very suggestive not only from its name, but from its general subsoil formation, of occupying the site in early ages of a lake or marsh. The present ground level is only a few feet above the highest Wye floods. The overflow of Eign Brook at the base of Hampton Park, at the highest floods, extends to the Ledbury Road at Scut Mill, and the Widemarsh floods between Edgar Street and Widemarsh Street are unpleasantly too well remembered by the tenants and proprietors of that district.

About twenty years ago some digging for gravel took place in the gardens of Mr. Seed, the photographer, now occupied by Mr. Downes, the carriage builder, 95, Widemarsh Street, adjoining the Coningsby Hospital. From an undated manuscript of a former librarian (Mr. D. R. Chapman) in my possession I read :—"For about three feet from the surface the soil was of a loose alluvial nature, below that for the depth of another three feet it became gradually more compact until, at the depth of about six feet it became a red clay; directly under this red clay was a band of dark, almost black, alluvial deposit containing a large quantity of vegetable matter, about eight inches in thickness; immediately again under this was a bed of peat gradually thickening from about two inches on the one side of the six feet square pit which had been excavated to five inches on the opposite side."

In the peat were found bones of ox, horse, and deer, and in the gravel was some wood.

Upon enquiry recently as to the nature of the soil when digging a well 17 feet deep containing 10 feet depth of water in Owen's Bottling Works on the opposite side of Widemarsh Street, I could get no information of any other material than gravel having been met with. I have however, received information of black soil being found in drainage operations nearer Barr's Court Station.

In *Transactions* 1866, page 253, is a paper by Mr. T. Curley, C.E., to which members are referred, "On the occurrence of local deposit

* In a subsequent visit to the Old Weir Cliff by Professor Charles Callaway, D.Sc., F.G.S., Rev. H. E. Grindley, and myself, we found other Silurian fossils, such as Atrypa reticularis, Chonetes, &c. The ice-scratched stones have been placed in the Museum.

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of Peat with Shell-marl at Hereford" in digging for the Widemarsh Main Sewers through Mr. Bonner's field, the Stonebow Meadow, below Barr's Court Station. This corresponds with the meadow south-east of our Public Slaughter Houses, between there and the railway line, as well as extending beyond the line itself.

Underlying one foot of surface soil containing much rubbish were three feet of pure brick earth, of fine quality, without stones or pebbles. Under this was a bed of peat, 3 feet deep, of a light porous character, containing pieces of decayed wood, and other decayed vegetable matter, with scarcely any admixture of earth. Below this again was a 2 feet depth of marl, covered superficially with layers of decayed leaves, possibly a variety of willow; interspersed throughout the marl were varieties of British fresh-water shells—Planorbis, Limnæus, Helix, Anodon, Unio, &c.

Although this peat must doubtless have taken a considerable time to accumulate, it is evidently of comparatively recent date, and belonging to the post-pliocene formation.

Copies of Mr. Curley's Map, on the scale of 16 inches to 1 mile, dated 1868, are rare. It was made for the Hereford Improvement Act of 1854, and contained Geological Sections on the vertical scale of 20 feet to 1 inch. The Sections generally show bands of sand alternating with gravel. In one Section south of the river Wye, a band of large pebbles is shown near Drybridge House.

The Section running north-east from the Reservoir on Broomy Hill to All Saints' Church, thence along the line of the main sewer down Commercial Road, thence down Stonebow Road between the Workhouse and the Public Slaughter Houses, to its old outlet at the bottom of Eign Hill, is very interesting. The summit of Broomy Hill is capped with a shallow layer of gravel, lying upon a band extending a quarter of a mile down the hill of strong puddle clay. A second layer of gravel is met with superficially about the neighbourhood of Ryeland Street. Dark vegetable soil occupies the surface for more than a quarter of a mile until we reach the western corner of West Street; from this point to All Saints' Church we find a superficial bed of silt. The substratum consists of portions of that 900 acre bed of gravel, composed of pebbles containing Silurian fossils and fragments of Trap, upon which our city is built.

We have old Claypits in the north-east; marl at the Tupsley Brick and Tile Works; in 1868 a Brickyard occupying the site behind the present Sanitary Laundry in Ledbury Road. Claypits, Brick, Tile, and Drain Works, at Burcott, just over our northern boundary.*

* At the present date, April, 1905, excellent marl for red brick making can be seen in the several trial excavations on the hill north east of Barr's Court railway line (Hereford and Shrewsbury Branch), surmounted by the Herefordshire County College, recently changed into the Herefordshire Training College.

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Coming to ground on a lower level, the dry and enviable character of our Cricket Ground at Widemarsh is doubtless due to a gravel subsoil. In fact recent excavations in Grand Stand Road, west of the Cricket Ground, exhibit gravel at the depth of only one foot below the ground level.

Proceeding further west to the more elevated ground of Westfields, marl is found very near the surface. The houses at Westfields are supplied with water from wells from 10 to 15 feet below the surface.

In the digging of our drainage operations in the City alternations of alluvial sand and gravel are almost invariably met with. The exposure of about 15 feet of gravel in the grounds of the Workhouse has for many years been a spot of interest to me—not only from its being a good locality for observing the date of the return of the Sand Martin to our country from its long migratory travels, but also for the lessons its alternate beds of gravel, sand, and clay impart.

For many years have I in vain been looking out for the revelation of tales of very early days by the exhumation of bones, may be, of some extinct monster. I have in my possession, however, a dark purple, almost black stone, weighing 5½ lbs., from these gravel deposits, which has travelled a long distance, as indicated by its smoothed and polished characters; it does not bear any traces of ice action. It is of intense hardness and very close texture. It has not been examined microscopically, but Professor Callaway, who was enticed to pay a visit to our locality directly he heard of our ice-scratched stones found at Stretton Sugwas, has seen it, and thinks it is Lydian stone, an indurated claystone, coloured by carbonaceous and ferruginous matter. I consider it highly siliceous.

We have in our Museum a fine *Lituites*, an Upper Ludlow mollusc, found when digging the foundations of Mr. Merrick's house in Venn's Road, Aylstone Hill.

The panorama from many of the rounded eminences of our lovely county of Hereford, aided with contoured maps of the district, presents a large field for reflection upon the altered features of our country by forces not limited to denudation, mighty as that force has been. The forces of ice and of stupendous volumes of water have not received the consideration they demand.

Mr. Aldis's paper has re-opened a large field for observation of our immediate surroundings, and has exposed to us our own negligence in our drifting away from the study of the ground upon which we tread, a subject diligently pursued by the founders of our Club. The study of the Drifts in Herefordshire, effluents from lakes, affluents into rivers, the capture of our rivers and their tributaries, changes in the physiography of our country, and the careful examination of our gravel beds will be found subjects of engrossing interest, and will lead us to reflection upon the earlier days of the pre-glacial, glacial, and post-glacial

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periods, and to the marvellous changes our country has undergone since Ice or Water held almost undisputed sway over it, since our little island of Britain first "rose from out its azure main." You can all help us in our researches. Objects of apparent insignificance, such as a few small scratched pebbles in gravel beds, with larger masses indicating a more gigantic propulsive force, often prove valuable aids in the determination of scientific facts.

There rolls the deep where grew the tree,
O earth, what changes hast thou seen!
There, where the long street roars, hath been
The stillness of the central sea.

The hills are shadows, and they flow
From form to form, and nothing stands;
They melt like mist; the solid lands
Like clouds they shape themselves and go.—*Tennyson.*

"And surely the mountain fadeth away,
And the rock is removed out of its place,
The waters wear away the stones:
The overflowings thereof wash away the dust of the earth."

Job., chap. xiv., v. 18. Revised version.

As an instance of what an observing eye can see in his walks over the country, I conclude with the following letter received from Mr. Aldis, who to our regret has left Herefordshire.

THE DRY VALLEY AT WORMELOW TUMP.

"Dear Dr. Moore,—I am not sure whether any one has called attention to this interesting example of a river valley now dry owing to its head waters having been cut down to, or captured, by another stream.

Formerly a large area was drained through this gap which now drains into the Worm. In a normal system of drainage the tributary streams regularly converge to the main river.

If we study the map we see that many of the upper tributaries of the Worm have to double back before joining it. May we not assume that such preposterous affluents are streams the Worm has annexed by eating its way back? If we take this view the upper basin of the stream that once flowed by Wormelow Tump would be bounded on the west by a watershed running from Saddlebow past Kilpeck and between St. Devereux and Wormbridge. It would then follow pretty much the present water-partings past Clehonger, and so on to Haywood.

Yours truly,

T. S. ALDIS."

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FURTHER NOTES ON ICE-ACTION AND ON ANCIENT DRAINAGE SYSTEMS CONNECTED WITH THE WYE VALLEY.

By Rev. H. E. Grindley.

Dr. Moore has asked me to add some notes to the foregoing on the Glaciation of the Wye Valley. My attention was only called to the subject by glancing through the MS. of Mr. Aldis' paper a few days before it was read at the Wyre Forest Meeting, so that there has hardly been time to do more than suggest a working theory founded on a few general observations.

The occurrence of gravel pits along a line from the slope immediately N.W. of Kingstone Grange to the fork on the Leominster Road, ¼ mile N. of Wellington Bridge, seems to point to the existence of a terminal moraine running across the Wye Valley and the two beheaded and truncated valleys occupied by the Midland Railway and the Wellington Brook. At Kingstone Grange the gravel pit is on the 400ft. contour, and the view from it suggests that there has been a lake occupying the site of Great Brampton and Shembre, drained by a tributary of the Cage Brook. At the third milestone from Hereford on the Pembridge Road, on the N.E. side, is a gravel pit containing numerous striated stones. One mile further on the same road, on the north side of a cross road from Burghill Portway to Moreton, there is a large pit (about 370ft. O.D.) of somewhat finer gravel with a good deal of infiltrated lime cementing the pebbles together. I am greatly indebted to Mr. Robert Clarke for directing my attention to several of these gravel pits. From present observations I should estimate this moraine to be on an average of 2½ to 3 miles in width. Future research may prove it to be much more extensive. This width would include the Drift that covers the hills about Breinton.

The strata in these gravel pits, I believe, are the same as those which Symonds calls High Level Drifts, while the gravel sheet that underlies the City itself belongs to his class of Low Level Drifts. As to whether the two have a distinctly different origin and history I am not prepared to speak at present. At the base of the moraine at Bredwardine described by Mr. Aldis, I have found striated stones.

The origin of this moraine at Bredwardine is obscure. I am inclined to attribute it to the meeting of two glaciers, one from the direction of Hergest Ridge, where, according to the Geological 1in. Map, boulders are found, the other from the direction of Clyro Hill. (In a stream near the village of Clyro I have found clay with striated boulders). In

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connection with this moraine the causes which have led the Wye to excavate the bank above Bredwardine Bridge and at Brobury Scar need detailed investigation. In fact there would be a great deal of interest in discovering the causes which have driven the Wye to encroach on the north side of its valley, and forsake the obvious valley line south-west of Moccas, Tyberton, and Great Brampton. Probably glacial deposits will be found to have had some part in this apparent deviation. It is earnestly to be hoped that the Club will take up the enquiry into modifications in the scenery of Herefordshire produced by Glaciation. The whole subject lies at present untouched, and offers a splendid opportunity of original research.

There is another line of investigation which, though a good deal more speculative, may prove even more fascinating, I mean the application of Prof. Davis' theory of River Development to the river system of Herefordshire and the district. Briefly the theory is that when the land first emerges from the sea the drainage follows the dip of the strata, denudation proceeds unevenly on hard and soft rocks, so that the lateral tributaries of the original streams which flow over soft strata erode more rapidly than those which flow over hard, and by the working back of their head streams frequently join one another over a narrow col, so tapping the original "consequent" stream, and, when denudation is sufficiently advanced, producing a stream which flows at right angles to the "consequent" stream, and along the strike of the strata. In the last stage of denudation tributaries of these "subsequent" streams flow into them against the dip of the strata, and are known as "obsequent" streams. A walk over the ridge between the Arrow and the Wye from Michaelchurch to Clyro Hill suggests to me that the Arrow from Newchurch to Kington, and the Wye from Glasbury to Clifford, which, speaking broadly, follow the strike of the Old Red and Upper Silurian strata, are "subsequent" rivers, and that the original "consequent" streams of the country flowed S.E., and the head waters of the "consequent" Herefordshire Wye and Dore are found, the one in the Gladestry Brook and other streams running from the Black Mixen in Radnorshire, the other in the Arrow above Newchurch, and similarly that the streams now flowing down the slopes of the Upper Silurian past Bryngwyn and Rhos-goch are the head-waters of streams that have cut deep valleys along the flanks of the Black Mountain towards the south-east.

In the same way the course of the river that flowed through Tyberton and Great Brampton must be looked for past the gap at Wormelow Tump, down the depression towards Ross, and past May Hill.

To some such an hypothesis may seem too speculative, but when it is considered that the theory of Consequent, Subsequent, and Obsequent Streams was employed (*Geographical Journal*, Vol. V., The development of some English Rivers, and the Drainage of Cuestas,

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Proc. Geol. Assoc., Vol. XVI.) by Prof. Davis to prove that the Upper Severn originally flowed into the Thames and has been captured by the subsequent river, the Lower Severn, the assumptions made above seems very slight in comparison.

The whole theory, though largely accepted, has, it is true, opponents among men of eminence. To me it seems to illuminate hitherto dark problems. I would urge the Club to take up this study of the River Systems of the district and test the theory as applied to them. It opens up a fascinating investigation, when we realise that every gap in a range of hills, though now high above any stream course, and possibly waterless, is a relic of a long vanished river valley, and that by piecing together the evidence bit by bit we may perhaps reconstruct the story of the rivers from the time when the Carboniferous Rocks stretched over the county, from the Clee Hill to the South Wales Coal field, down to the time when the ice sheet invaded the district, and by so doing we may carry westward the links which connect the drainage of the greater part of South Wales and Mid-England with the one great primeval river Father Thames.

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RECORDS.

ENTOMOLOGY.—The striped Hawk-Moth, *Deilephila livornica*, was found in the parish of Hentland on May 29th, and verified on the authority of Mr. William Blake, of Ross.

Another specimen is recorded from Herefordshire, taken on 10th September by Mr. H. Howard Shaw, Old Letton Court.

In his "British Moths," published in 1874, the late Edward Newman stated that most of the specimens alleged to be British were really of Continental origin, but there were a few undoubted British examples of this beautiful moth.

According to "The Entomologist" for June, this year, 1904, will be notable for the number of specimens of this species taken in this country. In the same issue the following seven localities, where the captures of nine specimens were made, are: Carlisle, Yelverton (near Plymouth), Wormwell (near Dorchester), Maisemoor (near Gloucester), Bournemouth, where another specimen had been taken earlier in the year, Brockenhurst, and the Isle of Wight (two specimens). Mr. H. H. Shaw also reports the capture of a perfect specimen of *Thyatira batis* on so late a period as 2nd September.

GEOLOGY.—In pursuit of the subject of "Drifts in Herefordshire" must be mentioned typical ice-scratched boulders from the deep Gravel Section alongside the Midland Railway at Stretton Sugwas, three miles from Hereford; from the Drift in the same parish, on the left bank of the Wye at Old Weir, in which were found fossils of the Upper Ludlow formation, such as Chonetes, Atrypa reticularis, Serpulites longissimus, &c.; and one found by Rev. H. E. Grindley in the huge mass of glacial drift on the right bank of the Wye above Bredwardine Bridge. Specimens have been placed in the Muesum.

MOLLUSCA.—Amongst some specimens of Land and Freshwater Shells sent to Mr. Roebuck, Dr. A. E. Boycott records some *Testacella maugei*. This is rather a rarity, is new to our county of Hereford, and came from the garden of The Grange, Broomy Hill, in the city of Hereford.

ORNITHOLOGY.—To the record of birds seen from Aylstone Hill, in the city of Hereford (*Transactions*, 1898, page 25), Mr. T. Hutchinson adds "On Sunday, 28th August, from Mr. Stooke's garden, Danesmere, Aylstone Hill, I heard, and saw flying northwards, the Common Curlew (*Numenius arquata.*")

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Herefordshire Tokens of the Seventeenth Century.

(See Vol. *Transactions*, 1884).*

Page 194, No. 28.—O. Iohn Rodd. 1670. A Cavalier hat.

„ „ R. In Heriford. I.F.R. (A square token).

Page 196, No. 31.—O. Lyson Thomas. Ironmonger. The Ironmongers' Arms.

R. In Hereford, 1668. His Half Peny.

Page 197, No. 33.—Will Welch.

There is a variety of this token dated 1665.

* For additions to Herefordshire Tokens since 1884, see *Transactions* 1900 to April, 1902, pages 69, 70, 244, and the Addenda on page 302 of the same Volume. Again, for previously recorded additions, see page 4 of the Errata, Addenda, and Index at the end of the Volume 1890 to 1892.

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WILLIAM HENRY PURCHAS, ætat. 77.

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THE LATE REV. W. H. PURCHAS.

By Rev. Augustin Ley.

William Henry Purchas was born on December 12th, 1823, at Ross, Herefordshire, in which town his father occupied at that time the position of a wine-merchant. As the eldest son, he was destined for his father's business; and his father being in weak health, he yielded to the strongly expressed wishes of his parents, and followed the business for a few years, until his younger brothers were able to take his place. From the first his personal wish had been to devote himself to religious work. He was the originator of, and for some years a diligent teacher in, the Sunday School at Ross, and Secretary to the Church Missionary Society. In the autumn of 1855 he proceeded to Durham University, and, having passed through the course, he was, on December 20th, 1857, ordained to the ministry of the Church of England, in the service of which he laboured unremittingly to the day of his death. The fields of his work were—Tickenhall, in South Derbyshire, 1857 to 1865; Lydney, Gloucestershire, 1865; Gloucester, 1866 to 1870; Alstonfield, North Staffordshire, 1870 to 1903. Here he died on December 16th, 1903.

From early boyhood his tastes had lain in the direction of Natural History. Entomology first attracted him, and while still a boy he made a very fair collection of butterflies; but botany was also an early pursuit; his elders used to complain that it was impossible to walk with William Purchas, he was so continually stopping to examine the things growing in the hedges. The taste for botanical study grew with his years. In the winter of 1851—2 he, in conjunction with the late Dr. Bull, M. J. Scobie, R. M. Lingwood, and a few others, founded the Woolhope Naturalists' Field Club, which has since done so much to make known the scientific and archæological treasures of Herefordshire. At that period he had already a wide knowledge both of general British botany and of that of his native county, and was in touch with the leading British botanists. His botanical work in Herefordshire was very thorough; he mapped out the county into fourteen districts, and, having got round him an ardent band of workers, he investigated and recorded energetically. The work flagged on his removal from the county in 1857 and the multiplication of ministerial and family cares; but in 1889 its results were at length published by him, in conjunction with myself, in the *Flora of Herefordshire.*

All Mr. Purchas's botanical work was painstaking and thorough. He spared himself neither time nor trouble in the investigation of critical points. He was self-distrustful to an excessive degree, and was very averse from publishing results until he felt perfectly sure of his

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ground. This, while diminishing from the fruits of his labours as regards science in general, rendered his knowledge of British plants singularly complete and accurate; and, with his great and unfailing courtesy towards all with whom he was brought into contact, made him a most delightful companion and correspondent.

He was early attracted by what are called "critical genera"—*Rubus*, *Rosa*, *Hieracium*, *Epipactis*, and others. These it was his wont to watch, to study, to go again and again over the points demanding attention, and often to end where he began with "After all, I doubt." The tangle of the fruticose *Rubi* was a study which gave full scope to his peculiarities of temperament. Here he had the advantage, on the one hand, of living in a district which seems to be prolific beyond any in Britain in bramble forms, and, on the other, of the friendship and co-operation of the band of early bramble students—Bloxam, Coleman, Newbould, and Babington. The last-named was a frequent visitor to Lingwood at Lyston, near Hereford, and Purchas joined in the investigations which led to the publication, in 1870, of Babington's *British Rubi*.

In those days, and indeed until the great enlargement of our knowledge of the genus in the nineties, through the help of the late Mr. Archer Briggs, Prof. Focke, and Rev. W. M. Rogers, the study of British brambles was a hopelessly puzzling affair; it involved trying to fit some 150 forms into 30—40 descriptions, and resembled the attempt to force 150 apples into a basket designed to contain 40; as fast as one was forced in another jumped out; and this confusion was worse confounded by innumerable inconsistent determinations given by those who were supposed to know, due in great measure to incomplete or misleading specimens. The marks of this early confusion are seen in the synonymy of many of our British forms. The bramble appropriately chosen by Mr. Rogers to perpetuate Mr. Purchas's name—*Rubus Purchasianus*—is a very local form, extraordinarily plentiful near Ross; the synonymy of this form is a good illustration of the fluctuation of these early discussions.

It is characteristic of Mr. Purchas that, although for many years this genus was his special subject of study, he never named more than one British bramble, and only (I believe) two other British plants (hawkweeds). Here again his real work is by no means adequately represented by the plants which he described. He knew, more thoroughly than any other man, the hawkweeds inhabiting the lower Herefordshire Wye valley, and the Derbyshire and North Staffordshire valleys of the Dove and Manifold. Yet, rich as these districts are in hawkweed forms, one from the Wye (*H. pachyphyllum*) and one from North Staffordshire (*H. cymbifolium*) were the sole plants he described. Both of these have stood the test of later criticism.

Roses became a favourite study with Mr. Purchas, especially in the later years of his life, when his lot was cast in a district where the

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bleak uplands of the Peak break away into deep glens, a country rich in roses, but poor in brambles. It is a matter of regret that he did not earlier and more actively take up the study of the rose-forms of this district, and do something to reduce to order the *mollis-tomentosa* group, for which science would have been grateful. He was always dissatisfied with Mr. J. G. Baker's ingenious arrangement of *Rosa canina*, thinking it too artificial; and he frequently pointed out to me how *R. coriifolia* could at once be distinguished in winter from *R. canina* by the clustered stems, short internodes, and upright growth.

On the puzzling forms of the genus *Epipactis* Mr. Purchas thought and observed much; see his remarks upon the so-called Herefordshire *E. ovalis* Bab. in *Fl. Heref.* p. 298. One of his favourite studies was the *fluitans-plicata* section of *Glyceria*; a variety described by him without a name in the *Phytologist* (iii. 736, 1849) was the plant since known as *G. pedicellata* Towns.

In 1895 Mr. Purchas began publishing in *Science Gossip* a series of papers on the "Characteristic Branching of British Forest Trees," which work a vein of observation hitherto neglected by botanists; these papers merit perhaps more attention than has been bestowed upon them.

It was due in part to the modesty of Mr. Purchas that his own observations of real scientific value were never recorded—such as the gradual untwisting of the capsule in the genus *Orchis* during the ripening of the seeds; and the uniform perishing of the terminal bud in certain species of *Salix*, so that the next year's growth starts from the first lateral bud.

He was an occasional contributor to the *Botanical Gazette*, 1849-1851; the *Phytologist*, Old Series, vols. ii.-iv.; the *Journal of Botany*, 1865-1895; and to *Science Gossip*, 1895. He also contributed to Watson's *Topographical Botany*. Numerous notes on plants contributed by him to the London Botanical Exchange Club appear in the Reports of that Club. His collections will be offered to the British Museum.

LIST OF BOTANICAL PAPERS PUBLISHED BY REV. W. H. PURCHAS.

Botanical Gazette.—1849, October. "On Viola sylvatica and canina," with figures of 12 capsules of Violets, p. 253; 1850: "Additional Notes on the Capsules of Viola," p. 54; 1851, August. "On Luzula Borreri," p. 99.

Phytologist, Old Series.—Vol. 2, "On the Botany of the Neighhourhood of Ross," p. 649; "Monstrosity of the Flowers of the Common Sweet William found at Ross, June 27, 1846," p. 667; "Occurrence of Polypodium calcareum at Coldwell Rocks, Herefordshire," p. 803; "Occurrence of Carex montana near Ross," p. 910. Vol. 3, "Remarks

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on Glyceria fluitans and G. plicata" (a very full account), p. 734. Vol. 4, "On Anther-cells of Chrysosplenium," p. 692; "On Epilobium virgatum," page 971; "Note on Epilobium Lamyi," p. 1,012.

Watson's Topographical Botany, Ed. i., pt. 2.—London Catalogue checked for Plants seen in the vicinity of Ross, Herefordshire, p. 532; Short Lists of Suffolk Plants, and of Plants near Aberystwith, Cardigan.

Journal of Botany.—1865, "On some peculiarities in the growth of the Hawthorn Tree" (quoted from "Transactions of the Midland Scientific Association"), p. 366; 1878, on "Rubus Purchasii Blox," p. 305; 1879, "On Symphytum asperrimum," p. 85; 1885, "Some more Notes on Dovedale Plants," pp. 181, 196; 1887, "A List of Plants observed in South Derbyshire," pp. 40, 101, 138; 1894, "On Rubus rubicundus (rubriflorus), sp. nov.," pp. 139, 187; 1894, "Derbyshire Records," p. 344; 1895, "On Hieracium pachyphyllum, sp. nov.," p. 114; 1899, "On Hieracium cymbifolium," p. 421.

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Woolhope Naturalists' Field Club.

ANNUAL WINTER MEETING, TUESDAY, DECEMBER 13TH, 1904.

The Annual Winter Meeting for the election of President and Officers for the ensuing year, 1905, was held in the Woolhope Club Room on Tuesday, December 13th.

The following attended :—Mr. T. Hutchinson (President), Revs. H. E. Grindley, Preb. W. H. Lambert, A. H. McLaughlin, H. B. D. Marshall, and W. E. T. Morgan ; Drs. Herbert Jones and Scudamore Powell ; Messrs. C. P. Bird, J. Carless, James Davies, C. J. Lilwall, G. Marshall, C. Rootes, J. P. Sugden, and Alfred Watkins, with H. Cecil Moore (Honorary Secretary) and James B. Pilley (Assistant Secretary).

Mr. Philip Baylis, H. M. Deputy Surveyor, Forest of Dean, was elected President for 1905. The four Vice-Presidents elected were :—Mr. T. Hutchinson (the retiring President), Mr. R. Clarke, Mr. C. J. Lilwall, and Rev. R. Hyett Warner. No change was made in the constitution of the Central Committee and other Officers.

The report of the Rev. J. O. Bevan, Delegate to the meeting of the British Association for the advancement of science, held at Cambridge, was presented ; he was re-elected Delegate for the ensuing year.

The report of Mr. Thomas Blashill, Delegate to the Congress of Archæological Societies, was presented ; he was re-elected for 1905.

Mr. Moore reported that the Birmingham Archæological Society and the North Staffordshire Field Club were placed on the List of Exchange of Publications.

In the report of Mr. H. C. Moore of the Volume of *Transactions* to end 31st December, 1904, he gave the information that the whole of the manuscript copy up to the present date was prepared, and he would be disappointed if the Volume was not ready for issue during the early months of the year 1905, seeing that 220 pages were already printed.

It was resolved that the Wild Birds' Protection (County of Hereford) Order, 1904, dated June 3rd, 1904, be printed in the *Transactions*.

EARTHQUAKES IN THE BRITISH ISLES.

A letter was read from Professor Charles Davison, D.Sc., 16, Manor Road, Edgbaston, soliciting records from Herefordshire of any of the 22 earthquakes recorded in the British Isles since the beginning of the 19th Century. Considering the position of Herefordshire as a

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seismic district, he is astonished at being unable to obtain any record of the strong Earthquake of November 9th, 1852, having been felt in the county, and especially requests accounts of the Herefordshire Earthquakes of October 6th, 1863, and October 30th, 1868. His letter gives the dates of the above-referred to 22 shocks. Any member finding such records in his own diary, in the files of old newspapers, or otherwise, will oblige by forwarding them to the above address, or to the Hon. Secretary of the Woolhope Club.

EXCAVATIONS AT CRASWALL PRIORY.

Mr. Lilwall gave a very interesting account of the great progress made under his superintendence in the Excavations at Craswall Priory since the visit of the Club on 28th June. Photographs taken by Mr. Robert Clarke were on view illustrating the apsidal east end, sedilia, piscinæ, a large aumbry, a large boss for nine ribs, of Early English style, Norman doorways, and deeply-splayed windows. Fragments of stained glass, decorated plaster, etc., were exhibited.

A highly interesting find is a leaden box, originally enclosed in wooden box, containing the bones of the left forearm and hand, probably the relic of some canonised person, to meet the prevailing conditions of the Earlier period before consecration of the building.

Mr. Lilwall was congratulated upon the success of his labours and thanked.

It was resolved that a subscription list be opened without delay for the Protection and Preservation of the Excavations and Finds; and that the surplus, if any, after completion of a fencing around the Excavations, and of a shed for the preservation of the Finds, be used for the extension of the Excavations. Mr. Moore was elected honorary secretary and treasurer of the Fund.

It was considered advisable that the following letter, drawn up by Mr. George Marshall, The Batch, Sarnesfield, be circulated by the honorary secretary to each member of the Club.

Dear Sir,—I beg to draw your attention to the fact that the exceedingly interesting excavations which Mr. Lilwall, of Llydyadyway, Cusop, has been making on the site of Craswall Priory have now been suspended during the winter months.

Since the Woolhope Club paid their visit to the site on June 28th last, considerable progress has been made. The entire area of the apsidal east end has been cleared, and has disclosed many interesting features. The stone altar remains *in situ*, though unfortunately the altar slab had perished or been removed at some former period. On the south side three sedilia, with a credence shelf and twin piscinæ have been brought to light, and a very graceful example of the Early English style of architecture, besides being arranged in an exceptional manner. On the north side is a large aumbry. Beneath the pavement, a little

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to the east of this opening, was discovered a small leaden box, originally encased in one of wood, containing the bones of some Saint, relics, no doubt, deposited at the consecration of the altar. A circular-headed doorway on the south side leads into what most likely were the domestic offices of the monastery, and an exactly similar doorway on the north side leads to what is apparently a square apartment, the use of which has not at present been determined. Three steps lead up to the altar, which stands on the chord of the arc of the apse, detached from the wall, as was usual. The east end was pierced by three narrow deeply-splayed Norman windows. Fragments of stained glass, some in the original leading, and decorated plaster have been found.

It is considered very desirable that some kind of fencing should be erected round the portion of the Priory already excavated. Standing, as the ruins do, in an open field, they are liable to the in-roads of cattle, and other stock, and are thus very likely to suffer considerable damage. It is also necessary to erect some kind of a shed upon the site, in which the finds may be securely housed, and to render some protection to the carved stone work from the injurious effects of frost and exposure.

Up to the present the entire expense of the excavations has been borne by Mr. Lilwall, and under the circumstances I confidently solicit your contributions towards the preservation of these unique monastic remains, which his zeal and liberality have disclosed to view.

Trusting you will see your way to assist,

I am, dear sir, yours truly,

H. CECIL MOORE,

Hon. Sec. Woolhope Naturalists' Field Club.

26, Broad Street, Hereford,
December 2nd, 1904.

BRITISH ASSOCIATION MEETING, CAMBRIDGE, 1904.

The Rev. J. O. Bevan, our Delegate, writing to the Honorary Secretary from Chillenden Rectory, Dover, under date August 26th, 1904, says :—I am endeavouring to take up the following question and to keep it before the Delegates, viz., "How to evoke the interest of school children in Literature and Science as to stimulate them to keep up their studies when they leave school." Do you think members of Local Societies would be induced to take an active part in this work, by way of furnishing Lectures, Guides to Museums, and the like? I am going to read a Paper on the subject before The College of Preceptors and a Local Society here. Through your influence, could I get this inserted in the Hereford papers,* or could an abstract be brought before the Woolhope Club, to accentuate a special appeal?

* This Paper has been reprinted in the "Hereford Times" in 3 parts. See "Hereford Times 1904, November 24th, page 13, December 3rd, page 13, and December 10th, page 13.

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As you are aware, the British Association meets in South Africa next year. It is difficult for me to make arrangements to go, both time and money being needful. If I could possibly manage it, I should like to attend. Do you know if any other member of the Club has made up his mind to venture?

REPORT OF REV. J. O. BEVAN, DELEGATE TO THE CORRESPONDING SOCIETIES.

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

The seventy-fourth meeting at Cambridge proved to be of special interest, by reason of the personality of the President, the large number of members attending, and the considerable proportion of foreign visitors. All the varied resources of the University and Colleges, Museums, Lecture-rooms, apparatus, were placed at the disposal of the Association.

The Presidential and Sectional addresses were of exceptional interest, especially may be noted Mr. Balfour's, Prof. Horace Lamb's, and Mr. Bateson's. The Bishop of Hereford's address must not be forgotten. His section was always well attended.

Perhaps the greatest weight of metal throughout was to be found in the mathematical section, where speculations on astronomy, radio-activity, and kindred subjects were freely dealt with.

The account given by Mr. A. J. Evans of his explorations in Crete attracted large audiences.

The Conferences of Delegates were fairly well attended. Principal Griffiths, of Cardiff, the chairman, in his opening address, dealt with the imperfect representation of societies, and the languid interest displayed by most societies in original investigation. He advocated a scheme whereby a larger number of societies should be affiliated, and a more constant interest developed by means of a journal or otherwise. The matter will be brought by him in due course before the Committee of Recommendations, so that a committee should be appointed to deal with the problem.

The opinion was expressed that local societies should be incited to do something to help forward Nature Study amongst young people in schools, and after school life has ended. Herewith are despatched the Journals and memoranda accumulated during the meeting.

CONGRESS OF ARCHÆOLOGICAL SOCIETIES, 1904.

Mr. Thomas Blashill, our Delegate, has forwarded the following Report of the Congress of Archæological Societies, dated Burlington House, July 6th, 1904.

Lord Balcarres presided in the absence of Lord Avebury.

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EARTHWORKS.

Mr. Willis Bund suggested rough lists of Earthworks in each county, so that those requiring special care should be known. Mr. C. H. Read suggested Registers of Earthworks of a sepulchral character generally before advent of the Romans. A large ordnance map should have the Earthworks marked on it. Then the Register should be made and the Earthworks watched. His Society (Wilts) did this for Salisbury Plain and furnished the War Office with copies. The descriptions by General Pitt-Rivers are models.

RECORDS.

Bill for preserving old Records by County Councils. I urged the support of this so that old deeds no longer of use to a family and requiring storage might not be destroyed as at present.

PLACE-NAMES.

Mr. T. H. Round spoke to this subject.

REGISTERS.

Mr. W. P. Phillamore said the Canterbury and York Society would publish all the Bishop's Registers in extended Latin with head notes. Would consider letting people have those of their locality only.

ANCIENT EARTHWORKS AND FORTIFIED ENCLOSURES.

The Congress of Archæological Societies have issued "Hints to helpers" and a Scheme for recording Ancient Defensive Earthworks and Fortified Enclosures. All plans should be drawn on the scale of 25 inches to 1 mile. Sections showing the vertical height of ramparts, and the depth of fosses, will be of great service.

Volunteer workers among the members of the Club will be advised as to requirements on application to Mr. H. Cecil Moore, 26, Broad Street, Hereford.

In the Report presented to the Congress of Archæological Societies, 6th July, 1904, the Committee expressed their desire not in any way to interfere with, or supersede, the functions of the local societies, but at the same time urged that the schedules (with plans, &c.) should be issued to a wider public than is included in their membership lists.

Their one great object in view is to increase public interest in these remains, and thus "Serve towards the preservation from mutilation or destruction of these priceless relics which no laws protect."

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The Committee point out evidence of interest in Early Defensive Works afforded by the issue of such papers as :—

Mr. J. Horace Round's "Castles of the Conquest" (*Archæologia*, Vol. LVIII.).

Mr. Hope's "English Fortresses and Castles of the Tenth and Eleventh Centuries" (*Archæological Journal*, Vol. LX.).

Mr. J. Westropp's "Ancient Forts of Ireland" (*Proceedings of the Royal Irish Academy*, Vol. XXIV.).

Mrs Armitage's "Early Norman Castles of England" (*English Historical Review*, 1904).

Mr. J. C. Gould's "Early Defensive Earthworks of the Sheffield District (*Journal of the British Archæological Association*, Vol. X., N.S.)

In the Victoria County Histories, chapters devoted to Defensive Works have already been published relating to Essex by J. C. Gould, and to Bedford by A. R. Goddard. Those for Warwickshire and other counties are in preparation.

The Report concludes by again pressing upon all Archæologists the importance of doing their utmost to prevent the destruction which from time to time threatens so many defensive enclosures of earth or stone.

The postal address of the Honorary Secretary is—

ROYAL SOCIETIES CLUB,
St. James's Street, London.

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Woolhope Naturalists' Field Club.

RECORDS.

ARCHÆOLOGY.—For finds by Mr. Lilwall in his excavations at Craswall Priory, see *antea*, pp. 346, 347. Fragments of stained glass from Craswall Priory, exhibited at the annual meeting, have been placed in the Museum.

GEOLOGY.—Boulders indicating Glacial action from the Gravel beds at Stretton Sugwas and from the River Section at Old Weir. Specimens have been placed in the Hereford Museum.

ORNITHOLOGY.—Rev. Charles Harington, Vicar of Aymestrey, gives the information that a party shooting over the Yatton Estate, in Aymestrey parish, on 1st December, put up a Golden Oriole (*Oriolus galbula*), and a Water-Rail (*Rallus aquaticus*). He saw the latter bird, and considers the authority as to the Oriole may be trusted.

PRESENTATIONS TO MUSEUM.

ARCHÆOLOGY.—Fragments of stained glass which had been buried for several centuries under the ruins of Craswall Priory. Presented by Mr. C. J. Lilwall, of Cusop.

GEOLOGY.—Small boulders indicating Glacial action, with the characteristic marks of smoothing, polishing, grooving, and scratching, removed from the Gravel Drifts of Stretton Sugwas, and the probable extension of the same at the Old Weir Bank on the Wye, one mile or more westwards. Also boulder clay from Stretton Sugwas Gravel Drift. Presented by Rev. H. E. Grindley and H. Cecil Moore.

LOCAL HISTORY.—An excellent fac-simile model, on the scale of 1 inch to 1 foot, of the Leominster Ducking Stool. The last record of its use dates 1809, when a certain Jenny Pipes was placed in the Stool and wheeled through the town. She was not, however, ducked, owing to medical advice that it would be dangerous to her health. Made and presented by Mr. T. H. Winterbourn, Photographic Artist, Leominster.

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WOOLHOPE CLUB LIBRARY.

A catalogue of the Books in the Woolhope Club Library was issued to every member of the Club in 1901. For additions in 1902 see antea page 82, and for additions in 1903 see page 206 of this volume.

BOOKS RECEIVED BY PRESENTATION, BY INTERCHANGE WITH KINDRED SOCIETIES, AND OTHERWISE, DURING THE YEAR 1904.

Album of Photographs of Presidents, Members, Hon. Members, etc., of Woolhope Naturalists' Field Club.
British Association. Report for 1903. Southport Meeting.
British Mycological Society. Transactions for 1903.
British Rainfall, 1903.
British Lizards. By Dr. G. Leighton.
Breconshire Papers. By John Lloyd. Vol. I. Presented by James G. Wood, F.S.A.
Birmingham Archæological Society. Transactions from 1886 to 1903. Seventeen volumes.
Botany. "Irises for the Rock Garden and the Waterside." Presented by the authoress, Miss Eleanora Armitage.
Church Stretton. Vol. I. Geology, Macro-Lepidoptera, Molluscs.
Church Stretton. Vol. II. Birds, Botany, Parochial History.
Church Stretton. Vol. III. Camps, Churches, and Archæological Remains.
Coral Gallery, British Museum (Natural History), Cromwell Road: Guide to the.
Collectors (Natural History), Handbook of Instructions for. Second Edition, 1904.
Caradoc and Severn Valley Field Club. Transactions 1903. Vol. III. No. 3.
Caradoc and Severn Valley Field Club. Record of Bare Facts for the year 1903.
Cardiff Naturalists' Society. Transactions. Vol. 36, 1903.
Clifton Antiquarian Club. Proceedings of the. Part XV. Vol. V. Part III., 1902-1903.
Cotteswold Naturalists' Field Club. Vol. XIV. Contents. Vol. I. to XIV., 1847-1903.
Cotteswold Naturalists' Field Club. Proceedings of the. Vol. XV. Part I.
Field Naturalists' Quarterly. Vol. III. Parts 9, 10, 11.
Geologists' Association. Proceedings of. Vol. XVIII., 1904. Parts 4, 5, 6, 7, 8, 9.
Geological Society. Quarterly Journal. Vol. LX. Part 1, No. 237. Part 2, No. 238. Part 3, No. 239. Part 4, No. 240.
Geological Society Library. Geological Literature added during 1903.
Geological Society. List of Members, Nov. 10th, 1904.

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Malvern College Natural History Society. Year Book. 1903-4, pp. 20.
North Staffordshire Field Club. Annual Report and Transactions. Vol. XXVII., 1893, to Vol. XXXVIII.
North Staffordshire Field Club. Index to Reports 1866 to 1898.
Marlborough College Natural History Society. Report of. No. 52, for year ending Christmas, 1903.
Symons's Meteorological Magazine. Vol. XXXIX, 1904. Presented by Mr. H. Southall.
Worcestershire Naturalists' Club. Transactions of. Vol. III., Part 2, 1903.
Year Book of Learned Societies, 1904.

BRITISH EARTHQUAKES.

The following letter to the Honorary Secretary of the Woolhope Club from Professor Charles Davison, on the subject of British Earthquakes was read.

16, Manor Road, Edgbaston, Birmingham,
November 23rd, 1904.

Dear Sir,—During the last 16 years, I have been engaged, as you are aware, in studying the earthquakes of this country, the results of my work being contained in papers published in the Quarterly Journal of the Geological Society, the Geological Magazine, and in my report on the Hereford earthquake of December 17th, 1896 (published by Cornish Bros., Birmingham). I propose now to carry the work backwards so as to prepare as complete a history of British earthquakes as may be possible at the present day.

To do this at all satisfactorily is of course beyond the powers of one man. It requires access to the files of many local newspapers. Records of past shocks may be preserved in private journals, and also in the memories of many persons, so vivid and lasting is the impression so often produced. Not a few are to be found in the pages of county histories or local magazines, in the minute books of societies, even in the registers of some religious bodies. Many of these sources are inaccessible to all but their owners, and it is therefore only by the kindly aid of others that the necessary materials can be obtained.

In appealing for such help to the members of the Woolhope Naturalists' Field Club, I cannot forget how many valuable observations I have received from them, and especially from their Secretary, on several former occasions. Had it not been for the timely aid so given, our knowledge of the Pembroke earthquake of 1892 and 1893, and of the Hereford earthquake of 1896, so far as regards the County of Hereford, would have been in a much less satisfactory condition than it now is.

As a seismic district, Herefordshire is of considerable interest. Besides being traversed by earth-waves from other centres, such as

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those of Pembrokeshire and Derbyshire, it contains within its boundaries the foci of some of the strongest shocks which have visited these islands. Few indeed have disturbed so wide an area as the Hereford earthquakes of 1863, 1868, and 1896.

Since the beginning of the 19th century, at least 22 earthquakes have been recorded, their dates being :—September 2nd, 1839; Jan. 24th, 1841; March 27th, April 1st, 1853; October 6th, 1863; October 30th, 1868; March 17th, 20th, 1871; April 22nd, 1884; August 18th, 1892; November 2nd, 1893; December 16th, 17th (eight shocks), 1896; July 17th, 1897; July 3rd, 1904. The strong earthquake of November 9th, 1852, must have been sensible in the county, though I am not aware of any record of its occurrence. Notes about any of these earthquakes would be most useful, but I should be especially glad to receive accounts of the Hereford earthquakes of October 6th, 1863, and October 30th, 1868. Of those which occurred eight years ago, on December 17th, 1896, I have now, I think, sufficient descriptions.

The points on which I desire most to obtain information are suggested in the appended series of questions. I may add that I shall be glad to send copies of printed forms containing these questions to any members of the Field Club or others who may be able and willing to give, to however slight an extent, the valuable assistance indicated in this letter.

Yours very truly,

CHARLES DAVISON.

FORM OF RECORD OF OBSERVATIONS ADOPTED BY PROFESSOR DAVISON.

Earthquake of————

1. Place of observation—

2. Condition of observer when the earthquake began, (a) indoors or outside, (b) awake or asleep.

3. Time of occurrence—

4. (a) Nature of the shock. (b) Was it divided into two distinct parts separated by a brief interval of rest and quiet? (c) If so, which part was the stronger, and how long was the interval between them?—

5. Was the shock strong enough : (a) to make doors, windows, etc., rattle; (b) to cause the observer's seat to be perceptibly raised or moved; (c) to make chandeliers, pictures, etc., swing; (d) to overthrow ornaments, vases, etc.; (e) to throw down chimneys or crack the walls of buildings?—

6. Was the shock accompanied by any underground sound, and what did it resemble?—

Name of observer.....

Address of observer.....

Date .....

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Owing to the initiative of the Woolhope Naturalists' Field Club, see *antea*, 1903, page 96, the Herefordshire County Council have obtained the following Order under the Wild Birds' Protection Acts :—

STATUTORY RULES AND ORDERS, 1904.

No. 1034.

WILD BIRDS, ENGLAND.

THE WILD BIRDS PROTECTION (COUNTY OF HEREFORD) ORDER, 1904. DATED JUNE 3, 1904.

In pursuance of the powers conferred on me by the Wild Birds Protection Acts, 1880 to 1904, and upon application by the County Council of Hereford, I hereby make the following Order :—

Title.

1. The Order may be cited as "The Wild Birds Protection (County of Hereford) Order, 1904."

BIRDS.

Additions to the Schedule of the Act of 1880.

II. The Wild Birds Protection Act, 1880, shall apply within the Administrative County of Hereford to the following species of Wild Birds in the same manner as if those species were included in the Schedule to the Act :—

Common Buzzard.
Honey Buzzard.
Dipper.
Peregrine Falcon.
Hen Harrier.
Hobby.
Kite.
Merlin.
Raven.
Red-backed Shrike.
Woodchat Shrike.
Siskin.
Wryneck.

The House Sparrow and Woodpigeon deprived of Protection.

III. The whole of the County of Hereford is hereby exempted from the operation of the Wild Birds Protection Act, 1880, as to the undermentioned birds :—

House Sparrow.
Woodpigeon.

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Certain Birds protected during the whole of the Year.

IV. During the period between the 31st day of July in any year and the 2nd day of March following, the killing or taking of the following species of Wild Birds is prohibited throughout the County of Hereford :—

Bee-eater.
Bittern.
Buzzard (all species).
Flycatcher.
Goldfinch.
Grebe (all species).
Hen Harrier.
Hobby.
Hoopoe.
Kingfisher.
Kite.
Lark (all species except Skylark).
Merlin.
Nightingale.
Nightjar or Fern Owl.
Tree Creeper.
Dipper.
Peregrine Falcon.
Nutcracker.
Nuthatch.
Golden Oriole.
Owl (all species).
Raven.
Robin.
Great Grey Shrike.
Red-backed Shrike.
Grey Wagtail.
Woodpecker (all species).
Wren (all species).

EGGS.

Certain Eggs protected throughout the County.

V. The taking or destroying of the eggs of the following species of Wild Birds is prohibited throughout the County of Hereford :—

Bee-eater.
Bittern.
Cirl Bunting.
Common Buzzard.
Honey Buzzard.
Curlew.
Dipper.
Peregrine Falcon.
Flycatcher (all species).
Goldfinch.
Grebe (all species).
Hen Harrier.
Heron.
Hobby.
Hoopoe.
Kingfisher.
Kite.
Lark (all species).
House Martin.
Sand Martin.
Merlin.
Nightingale.
Nightjar or Fern Owl.
Nuthatch.
Golden Oriole.
Owl (all species).
Quail.
Land Rail.
Water Rail.
Raven.
Mealy Redpole.
Redstart.
Snipe.
Stonechat.
Swallow.
Swift.
Long-tailed Tit.
Wagtail (all species).
Warbler (all species).
Wheatear.
Whinchat.
Woodcock.
Woodpecker (all species).
Fire-crested Wren.
Golden-crested Wren.
Wryneck.

Given under my hand at Whitehall, this 3rd day of June, 1904.

A. AKERS-DOUGLAS,
One of His Majesty's Principal Secretaries of State.

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RAINFALL IN HEREFORDSHIRE IN 1904.

COMPILED BY H. CECIL MOORE.

Some of our meteorological members will be interested in noting the contrast between the dry year of 1904 and its predecessor, the unusually wet year of 1903.

From the monthly Tables of Rainfall sent to the *Hereford Times* by our observers, the subjoined summary has been compiled from 10 stations. The comparison with the rainfall of 1903 may be made by reference to the Table from 22 stations, given *antea*, following page 220.

RAINFALL IN 1904 AT 10 STATIONS IN HEREFORDSHIRE.

STATIONS ...	Hereford Edgar Street.	Bromyard, Rowden Abbey.	Yarkhill Vicarage.	Ledbury, Underdown.	Much Marcle, Caerswall.	Ross, The Graig, Ashfield.	Much Dewchurch, Bryngwyn.	Vowchurch.	Kington, Gravel Hill.	Lyonshall, Lynhales.
Height in Feet above sea level	184	455	190	307	422	213	420	450	540	566
Situation from Hereford as the centre and distance in miles from Hereford	Centre	N.E. 13	approximately. N.E. by E. 6¼	E. by S. 13	S.E. 9	S.E. by S. 11¼	S. by W. 6	W. by S. 9	N.W. 16	N.W. 15
Observer... ...	W. Cooke	Henry J. Bailey.	Rev. A. G. Jones.	Sp. H. Bickham.	J. A. H. Charles.	H. Southall.	Sir J. Rankin, Bart.	A. S. Wood.	Col. G. F. Pearson.	S. Robinson.
JANUARY -	2·38	2·54	2·80	2·46	3·18	3·10	4·31	4·46	4·02	3·38
FEBRUARY -	4·265	3·81	4·13	4·23	4·21	4·42	5·46	5·88	5·10	4·81
MARCH -	1·243	1·46	1·43	1·44	1·48	1·70	1·98	1·85	2·24	1·89
APRIL -	0·90	1·26	1·21	1·13	1·23	1·25	1·18	1·22	1·35	1·04
MAY - -	1·71	2·47	1·72	1·83	2·16	2·11	1·94	2·24	2·14	2·08
JUNE - -	0·69	0·74	0·73	0·64	0·95	0·97	0·91	0·81	1·30	1·21
JULY - -	3·035	3·12	2·23	2·66	2·25	1·90	2·42	2·63	2·75	2·33
AUGUST -	1·345	1·63	1·33	1·40	2·09	1·77	2·35	1·63	2·40	2·71
SEPTEMBER	1·855	1·93	2·05	2·63	2·37	2·16	2·04	2·68	2·40	2·41
OCTOBER -	0·51	0·90	0·69	0·45	0·63	0·55	0·52	0·61	0·96	1·07
NOVEMBER -	1·43	1·41	1·33	1·42	1·76	1·23	1·50	1·59	1·80	2·01
DECEMBER -	2·10	1·98	1·84	1·85	2·31	2·19	2·60	3·05	2·55	2·71
TOTAL -	21·463	23·25	21·49	22·14	24·62	23·35	27·21	28·65	29·01	27·65

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The following notes are from the *Hereford Times* of January 7th, 1905, page 7 :—

Rainfall at Caerswall, Much Marcle—Observer, Mr. J. A. H. CHARLES.

1904.	RAINFAL IN INCHES.	NUMBER OF DAYS ON WHICH RAIN FELL.	AVERAGE FOR 32 YEARS.
January	3·18	25	2·41—30
February	4·21	24	2·05— 3
March	1·48	19	1·65—14
April	1·23	19	1·83—20
May	2·16	18	2·26—21
June	·95	11	2·20— 2
July	2·25	18	2·59—21
August	2·09	17	2·80—23
September	2·37	13	2·40— 1
October	·63	18	2·96— 4
November	1·76	13	2·68—24
December	2·31	24	2·53—12
	24·62	219	28·41—15

Rainfall at Rowden Abbey, Bromyard—Observer, Mr. HENRY J. BAILEY.

(From the *Hereford Times*, January 14th, 1905, page 7.)

1904.	RAINFALL IN INCHES.	NUMBER OF DAYS ON WHICH RAIN FELL.
January	2·54	22
February	3·81	21
March	1.46	16
April	1·26	13
May	2·47	17
June	0·74	9
July	3·12	15
August	1·63	16
September	1·93	11
October	0·90	15
November	1·41	12
December	1·98	21
Total for 1904	23·25	188

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Rainfall for the past eight years at Rowden Abbey, Bromyard.

	INCHES.	DAYS ON WHICH '01 INCH OR MORE RAIN FELL.
1897 ...	25·71 ...	177
1898 ...	19·70 ...	152
1899 ...	29·93 ...	154
1900 ...	30·50 ...	180
1901 ...	21·55 ...	154
1902 ...	25·09 ...	163
1903 ...	35·86 ...	205
1904 ...	23·25 ...	188
Average for the last 8 years.	26·08 ...	171·6

Mr. H. SOUTHALL, of The Graig, Ashfield, Ross, has sent me a copy for reproduction of the subjoined statistics which he supplied to the *Ross Gazette*, January 5th, 1905, page 4.

COMPARISON OF RAINFALL, 1903 AND 1964,

Showing the remarkable contrast between the wet year, 1903, and the succeeding dry year, 1904.

RAINFALL AT THE GRAIG, ROSS.

YEARS 1903 AND 1904 COMPARED.

				Days on which '01 inch fell.		Diff'ce. from aver. 1867-1897.	
	1903.	1904.	Diff'ce.	1903.	1904.	1903.	1904.
January	3·51	3.10	—0·41	22	24	+0·63	+0·22
February	2·15	4·42	+2·27	11	22	—0·01	+2·18
March	3·34	1·70	—1·64	26	18	+1·45	—0·19
April	2·31	1·25	—1·06	13	15	+0·37	—0·69
May	4·22	2·11	—2·11	19	21	+2·09	—0.02
June	2·81	0.97	—1·84	12	12	+0·63	—1·21
July	2·52	1·90	—0.62	20	13	—0·31	—0·93
August	3·53	1·77	—1·76	18	20	+0·89	—0·87
September	3·04	2·16	—0·88	18	14	+0·13	—0·75
October	7·40	0·55	—6·85	31	13	+4·44	—2·41
November	1·18	1·23	+0.05	12	8	—1·69	—1·64
December	2·11	2.19	+0·08	17	10	—0·50	—0·42
Year	38·12	23·35	—14·77	219	199	+8·12	—6.73

The above table shews the great contrast between two succeeding years. The wet spell which began on February 22nd, 1903, continued

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to February 17th, 1904, the largest rainfall being during the 365 days ending then (41·75 inches), or 41 inches and three-quarters. In the course of 87 years, this has only been equalled about twice or three times. The year 1852 being about 42 inches. The year 1872 was 41·48 inches. For 365 days, ending February, 1883, however, rather more than 43 inches were gauged. The rainfall in 1903 was principally caused by the following wet periods :—

February 22nd to March 31st,	38 days	...	5·42 inches.
April 25th to May 16th,	22 „	...	5·02 „
May 28th to June 15th,	19 „	...	3·83 „
August 13th to Sept. 2nd,	21 „	...	4·82 „
Sept. 23rd to Oct 31st,	39 „	...	8·46 „
	139		27·57

There were also several periods of dry weather :—

January 11th to Feb. 21st,	42 days	...	1·10 inches.
April 1st to April 24th,	24 „	..	0·34 „
June 15th to July 15th,	30 „	...	0·29 „
	96		1·73

On the other hand, the principal dry periods in 1904 were :—

73 days	ending	April 30th	... ...	3·30 inches.	
47 „	„	July 18th	... ...	0.90	„
52 „	„	Nov. 5th	... ...	0·94	„
56 „	„	Dec. 31st	... ...	3·42	„
228				8·66	

The effect on springs will be felt for some time longer, unless we have a heavy downpour soon.

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THE GOSHAWK.

By James B. Pilley.

The followng note containing an account of the Goshawk (" *Astur Palumbarius* ") was contributed to the " Field " of May 28th, 1904, by Mr. J. E. Harting, author of " Birds of Middlesex," " Handbook of British Birds," &c., &c. Although the locality is outside our county of Hereford, it may be considered within the limits of the country embraced by the Woolhope Club. Such an unusual occurrence, of special interest to ornithologists, deserves preservation in the volumes of the Woolhope Club.

Mr. Harting writes:—" Mr. Charles Whitchell, of Cheltenham, has recently written to me as follows: The Goshawk nested near Cheltenham last year (1903), and an egg from the nest was identified at the Natural History Museum, South Kensington. The birds again nested at the same spot this spring, but on April 5th both of them were shot at or near the nest, by the person on whose land they had made their home, thus meeting the fate of most rare birds. They have been sent to a taxidermist, Mr. Clarke, of Cheltenham, who showed them to me, though he declined to mention the name of the person who shot them. It was a dastardly act, for the birds are not alleged to have done any noticeable damage, and if they had, there would doubtless have been many willing to pay for it rather than see two such interesting and rare birds wantonly destroyed in the breeding time. Mr. Clarke above mentioned, writing to me on May 22nd, states that there were five eggs in the nest, two of which were unfortunately cracked by the climber in bringing them down. The nest of the previous year contained four eggs, all of which came into his possession."

Mr. Harting further adds that a pair nested in a covert in Yorkshire in May 1893, after a lapse of more than three-quarters of a century from the date of finding the last goshawk's nest in Scotland. A gamekeeper in charge of the covert stated that he had shot the hen bird and taken the eggs, four in number. . . . Mr. Bidwell, a well-known ornithologist, hearing of this, went down to Yorkshire to make a visit of inspection, and reported that the bird was correctly named. The finder stated that the nest, which contained four fresh eggs, was about 20 feet from the ground, on the branches near the trunk of a slender spruce. It was very large and flat, and another nest or platform was used for dressing the food. . . . The bird shot, together with two eggs, was obtained for the Norwich Museum, where it will be preserved in testimony for years to come of the nesting of this rare species in Britain.

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In a work published in 1789 by Dr. Berkenhower, a description is given of this species, but no particulars of its breeding. Col. Montagu, in his Dictionary of British Birds, published in 1813, states that the Goshawk is rarely found in England, but occurs in Scotland, where it breeds. Dr. Latham, quoted by the same writer, says that this bird was not uncommon in Germany, where it remains the whole year preying on various birds, including geese, whence perhaps the name goosehawk or goshawk ; he also adds that he saw several specimens of this species in the forest formed by Glenmoor and Rothiemurchus in Scotland. In the second edition of Yarrell's " British Birds," published in 1845, it is stated on the authority of Mr. Selby that the Goshawk breeds in the forest mentioned above.

In the "Zoologist," which first appeared in 1843, mention is made of several specimens of this bird having been obtained in Britain. As it had ceased to be a resident species, the majority have been obtained in the eastern counties. Norfolk heads the list with eight examples, the first obtained in 1843 ; Suffolk records four, Northumberland and Yorkshire three each. One specimen only is recorded from the counties of Leicester, Lincoln, Oxford, and Surrey.

The only authenticated instance of the occurrence of this species in Ireland during the past century was recorded in " Land and Water," March 5th, 1870. She was an old female, weighing three pounds seven ounces, and was shot during the previous winter in the Galtee mountains, Tipperary.

It is rather remarkable that in old hawking days Irish goshawks were famous, and are to be found mentioned in some of the oldest works on falconry ; in " Libro de cetreria," by Don Fadrique de Cuniga y Lotoma, published in Salamanca, in 1565, and also in the " Book of Falconry or Hawking," by George Turkerville, published in London in 1611. Both of these works were the greatest authorities of their time, and the Irish goshawks are mentioned as being the most highly prized. (Mr. A. B. Brooke in " The Zoologist.")

This species of hawk is much larger than the common buzzard, and is not subject to such variety in plumage, it is also more elegant in shape than that species ; it more nearly resembles the sparrow hawk, having similar markings on the breast, and the wings only reaching half way down the tail. The upper part of the plumage is brown, under parts greyish white, barred with ashy-brown.

There is an excellent specimen in the Hereford Museum, a female ; the under parts are buff with oblong markings of dark brown ; it is evidently a young bird. It was presented to the institution by Mr. John Riley, a member of the Woolhope Club.

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HEREFORDSHIRE DIPTERA.

THE PLATYPEZIDÆ, PIPUNCULIDÆ, AND SYRPHIDÆ.

By John H. Wood, M.B.

To attempt a complete list so far as known of the Flies of Herefordshire, would be too great an undertaking on the present occasion, I have therefore restricted myself to the three families whose names are placed at the head of this paper, a mere fragment though it be of that huge body of insects that goes to form the order Diptera—and this for several reasons. In the first place, being for the most part large and gaily-coloured insects, they appeal to the beginner in much the same way as do the gaudy day-flying butterflies to the embryo Lepidopterist. Hence they have been more thoroughly studied and collected than most of the other groups, and their limits as far as the British Fauna is concerned may be considered as now finally settled. Not but that an occasional addition is to be expected in the future, as has indeed been the case quite recently by the discovery in this our own county of Hereford of 3 new British species in the *Platypezidæ*. Then again, we have at last a reliable text book in Mr. Verrall's excellent volume, "The Platypezidæ, Pipunculidæ, and Syrphidæ of Great Britain," the first instalment of that gigantic work he has promised us on the British Flies; and how gigantic it is may be gathered from the circumstance that this portly volume of over 700 pages is numbered Vol. viii., that is, it is to be preceded by seven other volumes, each of which has yet to make its appearance, whilst it will be followed by 4 others, in order to include the families whose natural position is after the *Syrphidæ*.

There are besides many points of interest about these three families. In the *Syrphidæ* are to be found perhaps the most striking instances of mimicry that our native fauna exhibits—not limited to a few forms here and there, but extending to whole genera, which have put on in a marvellous degree the form and colouring of Aculeate Hymenoptera. The object in most cases is apparently to save the individual insect from the attacks of Birds and such like enemies; but in one sub-family at least, the *Volucellinæ*, the disguise has been acquired for a more interesting purpose, and enables these insects to enter with impunity, and lay their eggs in the nests of hornets, wasps, and humble-bees, where the larvæ are supposed to play the part of scavengers and to clear up the waste and refuse of the hive. Yet it must be confessed that the mimicry in the latter case stands for the most part at a lower level than in the former case, where no communal bond exists with the Hymenoptera. And so we must conclude that the *Volucellinæ* are provided with some additional safeguard, probably some scent or effluvium that renders them acceptable to their hosts; for I think it may be claimed for the olfactory organs that they are the chief highway to the intelligence

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throughout the greater part of the animal world. But let the resemblance be as perfect as it may, there is always something about them as they visit the flowers that betrays them to the eye of the collector. Watching, say, some hawthorn bush white with bloom and alive with insect life, he sees at once that the bees are in downright earnest—they work methodically and almost greedily, clutching the flowers in their claws, as if determined on leaving not a drop of honey behind them; whereas the gay flies—though they too have come for the honey, but for their own eating only—sit lightly to the work, travelling carelessly over the blossoms into which they now and then dip their heads for a sip, or idly bask in the sunshine.

For so small a group the habits of the larvæ are extraordinarily varied, almost all the modes in which larvæ gain their living finding representation here. Some live in watery places, such as our cesspools, where that repulsive creature, the large rat-tailed maggot of the Drone Fly *(Eristalis tenax)* is a well-known object, or in semi-liquid mud and peat holes. Many are associated with the lives and fortunes of other insects, either as inquilines, parasites, or predaceous enemies. Others again feed on a great variety of vegetable matter, as funguses, rotten wood or the sap exuding from diseased trees, and on other kinds of decaying vegetation; whilst a few and only a few, live in the stems of growing plants and in the bulbs of field and garden flowers. It is in the last class that the one injurious insect out of the whole number is to be found. This is *Merodon equestris*. The larva feeds on various kinds of bulbs, and has at times done enormous damage to garden *Narcissi*. It is not strictly an indigenous species, but was introduced from the Continent with the bulbs, and has now established itself in many places in the South of England, and as far north as Birmingham, but has not yet, I believe, invaded Herefordshire.

Perhaps the most singular in their habits are the parasitic *Pipunculidæ*. They lay their eggs in the bodies of the CICADLÆ, stinging their victims, it is said, whilst on the wing, a feat which only their marvellous powers of flight enables them to perform. To watch one of these small and elegant flies floating in and out among the herbage, and now and again poising itself on invisible wings before some object, facing first this way and then that, as if to examine it from every point of view, and then, its curiosity satisfied, gliding off again on its smooth and effortless flight, is to agree with Mr. Verrall that among all the Diptera they are the most exquisite of fliers.

The *Platypezidæ*, so far as known, live upon fungi, not the hard and woody kinds that are chosen by the Lepidoptera, but the soft and fleshy Boleti and Agarics; and I have myself seen the females of *Platypezæ fasciatæ* apparently ovipositing on *Agaricus melleus*.

But to us the most interesting of all, because of the enormous good they do, is the large sub-family of the *Syrphinæ*, which in the larval state prey upon those pests of the garden and the field, the Aphides.

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Many of these larvæ have the shape of small slugs, often variously ornamented with spines and processes, but others are more maggot-like and when feeding hold up the poor Aphis in the air, impaled on their needle-like head, and having sucked the juices, drop the empty skin and pick up a fresh victim. I might enter into further details, but enough has been said to show how full of interest the subject is from this point of view.

The number of British species belonging to the three families is about 260, and of these I have taken, practically single-handed, no less than 194 in Herefordshire, that is, considerably more than two-thirds of the number. Nor is this remarkable richness peculiar to these groups only. I have observed it, and sometimes in an even more striking degree, whatever the section might be I was working at. Among the causes contributing to this wealth, we must, I think, place in the first rank the geographical position and the physical nature of our country. In the main, the fauna is southern in type, but the proximity to Wales, and the hilly, not to say, mountainous, nature of the surface in parts have led to its successful invasion by many northern species, or perhaps it would be more correct to say that these northern species have been able to hold on during the amelioration of climate that followed the ice age, whereas in neighbouring regions not favoured with similar advantages they have been forced to retreat northwards. In this way, then, is to be explained the inclusion in the list of such fine and interesting species as *Chilosia chrysocoma*, *Syrphus annulipes*, *Eristalis rupium*, and *Chrysogaster Macquartii*, the natural homes of which are in Scotland. The habitat of the two last is the Black Mountain district, the *Eristalis* occurring regularly but in no quantity in Cusop Dingle, and the *Chrysogaster* at the foot of the mountain opposite Longtown, where I found it this year for the first time. The other two I have as yet only met with in the Woolhope district, though they can scarcely be absent from the North or West of the county. Both, so far as England proper is concerned, are extremely rare, and outside Herefordshire the *Syrphus* has only been taken (three specimens) in Devonshire, on the confines of Dartmoor, and twice in the Cotteswolds of Gloucestershire, and the *Chilosia* on one occasion in the Cotteswolds. Many other rare or interesting species might be mentioned, but as copious notes will be found in the list, it would only be going over the ground twice, so I will pass on to say just a few words about the chief localities in which I have collected.

First and foremost comes of course my own neighbourhood, the famous Woolhope District. Here the barren limestone soil, the alternating hill and valley with their numerous woods and rivulets, the boggy spring-heads, though these alas! are being lost one after the other, the rough pastures, some of which retain their natural turf and abound in plants as such turf always does, all combine to make it an entomologist's Paradise. Districts, however, of this description cannot fail to be

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rich, for the wood-capped hills in the course of ages waylay many a stranger driven before the storm, some of which will find in the varied surface a congenial spot to settle down in and establish their race. In the Ross district the Dowards, considering their reputation for plants and Lepidoptera, are distinctly disappointing. A few very good things are to be had there in the earlier part of the season, but it is too dry a place for Diptera, and after July very little is to be got. I have scarcely broken ground yet on the opposite side of the river, but Howle Hill and the dingle leading up it is distinctly promising from the little I have seen of it. Coughton Marsh and some wet ground near Whitchurch are quite worth visiting. The former is a fine place for *Pipunculus hæmorrhoidalis*, which was quite common there in May, 1902. It often happens that the good things of a locality are crowded together into a comparatively small spot. Just such a spot is there at Wall Hills, near Ledbury, a boggy hollow facing north, and many a pleasant hour have I spent there either alone or in the company of Colonel Yerbury. This is the only locality I know for *Pipunculus semi-maculatus*, which at the time Mr. Verrall brought out his work (1901) was not included in the British fauna. The insect since its occurrence here has been found in the New Forest also. There must be much good collecting to the East of Ledbury, but it remains almost unexplored. That great rarity, *Brachypalpus bimaculatus*, has occurred several times in the district, two having fallen to Colonel Yerbury's net, and one to Mr. Wainright's, of Birmingham. The larva feeds in old decaying oaks, and there is hardly any other part of the county in which so many trees of this description are to be found. Mosely Mere and Shobdon Marsh, and the wet pastures at Tram Inn hold a variety of good things, but they are perhaps more prolific in other sections of the Diptera than the one we are considering. It must not, however, be forgotten that from the boggy wood on Shobdon Marsh comes one of the most recent additions to the British fauna, namely, *Agathomyia boreella*. Outside my own district there is no locality I turn to with higher expectations than to Cusop Dingle, that wild and delightful valley among the foot hills at the North East end of the Black Mountains. Shut in by steep hills, their sides clothed half way up with scrub or natural woodland of very varied character, and broken at frequent intervals by open stretches of bracken beds and pasture, it winds along for some three or four miles to end at last on the high moorland, 1,400 feet above sea level. It is one of those places always full of surprises, and the farther up the dingle you work the richer and more varied does the collecting become. I have already alluded to the interest attaching to the presence here of *Eristalis rupium*, and among some of its other good things I may mention *Platypeza hirticeps*, an insect that was new to science when discovered here in 1899, *Pipunculus flavipes and varipes*, *Chilosia mutabilis*, *Syrphus torvus*, and *Syrphus triangulifer*, the single specimen of the last named being especially noteworthy from its being the fourth known British example.

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PLATYPEZIDÆ.

Opetia nigra, Mg. Males not uncommon from July to very late autumn ; best obtained by sweeping herbage. The only female obtained was taken paired July 27th.

Platycnema pulicaria, Fln. Probably not uncommon, but overlooked from its small size.

Callimyia speciosa, Mg. Common in damp and shady woods.

C. amœna, Mg. Do.

C. elegantula, Fln. Two females. Coldborough Park, May 23rd, 1904 ; Longtown, June 24th, 1904. New to British fauna. With all the general characters of a *Callimyia*, it is remarkable for having the elongated antennæ of an *Agathomyia*.

Agathomyia antennata, Ztt. Common.

A. viduella Ztt. Damp woods in the Woolhope District. May and June in each year from 1902 to 1904. Both sexes, but scarce. Previous to its discovery here the male was unknown. Beyond a male taken by Colonel Yerbury in Scotland last June, it has not occurred elsewhere in these islands.

A. boreella, Ztt. Another addition to British Fauna. Shobdon Marsh from July 9th to August 17th, 1904. About half a dozen of both sexes. A true *Agathomyia*, although the 3rd joint of the antennæ is short and rounded like that of a *Callimyia*.

Platypeza consobrina, Ztt. Common.

P. modesta, Ztt. Do.

P. rufa, Mg. Do.

P. atra, Mg. Scarce as everywhere else. Four females only, the dates ranging from July 11th to October 1st.

P. furcata, Fln. Very scarce. It was introduced into Mr. Verrall's work on the strength of a pair taken in Stoke Wood, June 21st, 1898, Haliday's record of its occurrence in Ireland having by the lapse of time become traditional. A few more have been taken since, and always in the early summer. The female, as it rests upon a leaf, may easily be mistaken for a small Anthomyiid.

P. dorsalis, Mg. Moderately common, though usually reputed rare. The males are only taken in the autumn, the females occasionally in early summer as well, after hibernation.

P. fasciata, Mg. Very common.

P. hirticeps, Verr. Common in Cusop Dingle, late in the autumn. It was its discovery here that enabled Mr. Verrall to introduce it in his work as a species new to science.

P. infumata, Hal. Uncommon.

P. picta, Mg. Scarce. Usually in the late autumn, but the hibernated female sometimes turns up in June.

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PIPUNCULIDÆ.

Chalarus spurius, Fln. Very common.
Verrallia pilosa, Ztt. Common.
V. villosa, v. Ros. Do.
V. aucta, Fln. Do.
Pipunculus furcatus, Egg. Do.
P. zonatus, Ztt. Do.

P. fascipes, Ztt. Ledbury, Woolhope, Ross and Golden Valley districts, but not common; June and July. Mr. Verrall says of it (British Flies), "very little known." But the examples of both sexes I was able to send him has since convinced him of its distinctness from *zonatus*, and of its claim to a place in our Lists.

P. modestus, Hal. Two only. Cusop Dingle, July 4th, 1903; Longtown, June 24th, 1904.

P. fuscipes, Ztt. Rare. Woolhope District; one male, May 27th, 1902; two females, July 23rd, 1900, and August 29th, 1901.

P. sp. inc. Comes very near *unicolor, Ztt.* Mr. Verrall says of it *in lit.*, "Not P. unicolor because of the large genital depression and dark humeri, and hardly P. fuscipes because of the very dark legs." Common and widely distributed throughout the county.

P. terminalis, Thoms. Moderately common in Woolhope district in June and again in autumn, from August to October.

P sp. inc. One female. Shobdon Marsh, August 18th, 1904. Remarkable for the presence of four long black hairs or bristles on the outside of the hind tibiæ at their bend or angle. I have seen these bristles in no other *Pipunculus*. It belongs to Becker's Group 1, and Mr. Verrall suggests it may be *arimosus, Beck.*, of which the female is unknown.

P. varipes, Mg. Two females, Cusop Dingle, July 26th, 1902.

P. campestris, Ltr. Very common.

P. pratorum, Fln. As common in Herefordshire as the previous species.

P. flavipes, Mg. Not common. Woolhope and Cusop Dingle, from June to September.

P. Strobli, Verr. Rare. One male, Shobdon Marsh, July 15th, 1902; one female, Woolhope, August 24th, 1898.

P. sp. inc. A very distinct species, unknown to Mr. Verrall, nor does it agree with anything to be found in Becker's Papers on the Pipunculidæ. It comes under that author's Group 11, and is a fairly large insect. The male has a naked dark brown thorax, slightly shining behind, a glossy scutellum, and a bronzy metallic abdomen, except on the first segment, which is dull; the fifth abdominal segment is twice as long as the fourth, and the hypopygium is shining, of moderate size, and with a wide shallow depression; legs yellow, but all the thighs broadly black as well as the tips of the tarsi; stigmatic cell nearly twice the length of the fourth costal division. Female much

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duller than the male, the abdomen blackish brown, moderately shining, and without the metallic bronze of the male, and with the usual grey lateral triangles indistinct; hypopygium large, shining black, with a small and straight yellow ovipositor; thighs much less extensively black than in the other sex. It was common in August, 1902, among bracken on the banks overlooking Devereux Pool, Woolhope.

P. confusus, Verr. Not common, but widely distributed (Woolhope, Doward, Cusop Dingle). May and June.

P. rufipes, Mg Rare. Woolhope, Doward, and Shobdon Marsh.

P. hæmorrhoidalis, Ztt. Coughton Marsh and some wet ground at Whitchurch, both in the Ross district. Was quite common at the former place on May 14th, 1902.

P. xanthopus, Thoms. A single male, Coughton Marsh, May 14th, 1902.

P. semimaculatus, Beck. Another very rare species, of which two males have been taken in a boggy spot at Wallhills, Ledbury, June 21st, 1901, and July 4th, 1902.

P. maculatus, Wlk. Scarce. Coldborough Park, Woolhope, and Howle Hill, Ross, in July and August.

P. geniculatus, Mg. Common.

P. sylvaticus, Mg. Scarce. Cusop Dingle in July.

SYRPHIDÆ.

Paragus tibialis, Fln. Common in dry open places.

Pipizella virens, F. Very common.

P. maculipennis, Mg. One female. Welsh Newton, July 27th, 1900. Confirmed by Mr. Verrall.

P. flavitarsis, Mg. Not common, perhaps overlooked.

P. Heringi, Ztt. Common.

Pipiza luteitarsis, Ztt. Scarce in Herefordshire, or overlooked.

P. quadrimaculata, Pr. One male, Woolhope, May 7th, 1898. Mr. Verrall (British Flies, p. 167) wrote of it "I do not know of an existing British specimen." Since then the Herefordshire insect has been submitted to him. From the males of the other large species in the genus, namely, *noctiluca, fenestrata,* and *lugubris,* it may be known by the very short and truncated third joint of the antennæ, by the pubescence on the thorax being whitish instead of brown or brownish yellow, by the entirely white calyptra (in the others the margin at least is dark), and by the presence of two pairs of large and conspicuous spots on the abdomen. The white pubescence and white calyptra are characteristic of the females only in the other species.

P. noctiluca, L. Common. Under it are probably included more than one species.

P. fenestrata, Mg. In May, 1900, this insect frequented a sunny "ride" in Stoke Wood in some numbers, and the catch was submitted to Mr. Verrall, subsequently to the publication of "British Flies." In

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returning them he wrote :—"The four females I think represent my *P. fenestrata*, of which I expect the seven males (representing probably my *P. lugubris?*) are the males." I therefore sent him my series of what I considered to be *P. lugubris* (two males and three females), and his final verdict was "I now KNOW *P. lugubris*, and I comprehend my *P. fenestrata*, and gradually I expect that several species will get truly distinguished, and by very different characters from the old ones; I succeeded in smashing up these old characters, but I couldn't get hold of the new ones."

P. lugubris, F. Of the five specimens mentioned above, one was picked up at Westhide Wood, and the rest at various times from June to August in the Woolhope District. It is one of the largest species in the genus, and both sexes always want apparently the yellow spots on the abdomen. Distinguishing it from its nearest allies are the sharply outlined cloud on the wing and the white pubesence of the abdomen, which assumes in the male the form of spots, and in the female of broad bands; but more critical distinctions are the elongated oval form of the third antennal joint in the male, and the excessive thickening of the hind femora in the female.

P bimaculata, Mg. In the spring and again in the autumn. Not common.

P. signata, Mg. Woolhope. Occasionally.

P. notata, Mg. Do. do.

Cnemodon vitripennis, Mg. Not rare.

Orthoneura brevicornis, Lw. Apparently not rare in Herefordshire. Almost common in a boggy spot on the banks of the Wye at Moccas, July 29th, 1899.

O. nobilis, Fln. Common.

Liogaster splendida, Mg. Very local. Shobdon Marsh, in July.

L. metallina, F.

Chrysogaster splendens, Mg.

C. hirtella, Lw.

C. Macquarti, Lw. Black Taren, Longtown, June.

C. chalybeata, Mg. Not uncommon at Whitchurch, Ross; scarce in the Woolhope District.

C. solstitialis, Fln.

Chilosia maculata, Fln. Common all over the county among *Allium ursinum.* In its manner of flight and way of holding its wings at rest it might readily be mistaken for a Tachinid.

C. sparsa, Lw. Woolhope, in early summer. Not common.

C. antiqua, Mg. Cusop Dingle and Dorstone. Early summer.

C. longula, Ztt. Widely distributed. From June to September.

C. scutellata, Fln.

C. soror, Ztt. Not common. Woolhope, Ledbury, and Ross. June to September.

C. pulchripes, Lw. Woolhope. Rather rare. Usually at sallow bloom in April and May, but sometimes much later in the year.

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C. variabilis, Pz.

C. honesta, Rnd. Three only. Cusop Dingle, May 28th, 1898, Woolhope, May 27th, 1899, and The Dowards, May 15th, 1901.

C. vulpina, Mg. This fine large species, usually considered so rare, is common, and widely distributed in Herefordshire in early summer and again in the autumn. On one occasion in the autumn I came upon several females apparently ovipositing on the underside of a large *Boletus satanicus.*

C. intonsa, Lw. Three only of this scarce species. Two males at The Dowards, July 19th, 1899, and September 7th, 1901; one female at Woolhope, May 21st, 1903.

C. illustrata, Harr.

C. chrysocoma, Mg. A single female, May 9th, 1898. This rare and very beautiful insect was captured whilst sunning itself late in the afternoon among a host of Eristalids on a hot bare ride in Haughwood, Woolhope. Only one other has, I believe, been taken in England, and that was on the Cotteswolds, by Mr. Wainwright; but in Scotland Colonel Yerbury has netted it on several occasions, at the blossoms of the Mountain Ash.

C. albipila, Mg.

C. nebulosa, Verr. One male, Woolhope, April 28th, 1902.

C. impressa, Lw.

C. albitarsis, Mg.

C. fraterna, Mg.

C. præcox, Ztt. Two females. Woolhope, May 21st, 1902, and May 4th, 1903.

C. mutabilis, Fln. Two males. Cusop Dingle, June 12th, 1900, and July 11th, 1903.

C. vernalis, Fln.

C. proxima, Ztt. The commonest in Herefordshire of the smaller species. My dates reach from May to August.

C. cynocephala, Lw. Woolhope, Tram Inn, and Cusop Dingle. In the spring and again in the autumn, but only males. The female is apparently rarely met with anywhere.

Platychirus manicatus, Mg.

P. discimanus, Lw.

P. peltatus, Mg.

P. scutatus, Mg.

P. albimanus, F.

P. scambus, Stæg. One female. Wallhills, Ledbury, June 8th, 1899.

P. perpallidus, Verr. Devereux pool, Woolhope, and the Leech pool, Clifford. At the latter place it was abundant on July 8th, 1902, and at the same time many of its pupæ, still unhatched, were to be seen affixed to the upper side of the leaves of that fine sedge, *Carex stricta.*

C. clypeatus, Mg.

C angustatus, Ztt. A male, Coombe Marsh, Shobdon, July 6th, 1901; a female, Devereux pool, Woolhope, July 31st, 1902.

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C. sticticus, Mg. One male only. Stoke Wood, May 4th, 1902.

Pyrophœna granditarsa, Forst. Common in marshy places.

P. rosarum, F. Do.

Melanostoma ambiguum, Fln. Common in April and May.

M. mellinum, L.

M. scalare, F.

Melangyna quadrimaculata, Verr. Abundant at sallow blossom in the spring.

Xanthandrus comtus, Harr. Occasionally in the autumn. Woolhope and the Dowards.

Leucozona lucorum, L.

Ischyrosyrphus glaucius, L.

I. laternarius, Müll. Not uncommon some years in July and August.

Didea intermedia, Lw. The Dowards, commonly. Woolhope, once only.

Catabomba pyrastri, L.

C. selenitica, Mg. It has fallen to Col. Yerbury's net at Woolhope, but I have not taken it myself.

Syrphus, albostriatus, Fln.

S. tricinctus, Fln. Not uncommon some years ago at *Umbelliferæ* in woods in July and August.

S. venustus, Mg. Common in early summer.

S. lunulatus, Mg. One only. Ashperton Park, June 11th, 1904. The specimen is a female, and has the typical broad abdomen.

S. annulipes, Ztt. Woolhope. A male, August, 1895, now in the South Kensington Museum; another netted September 12th, 1903, but subsequently lost; and two females, May 11th and 14th, 1901. The capture of four examples at such long intervals points to the insect being a true native in the Woolhope district.

S. torvus, O.—S. Cusop Dingle, One male, September 7th, 1898.

S. annulatus, Ztt. Moderately common in May and June.

S. vittiger, Ztt. Westhide. One female, May 20th, 1901.

S. grossulariæ, Mg. Widely distributed, but scarce.

S. ribesii, L.

S. vitripennis, Mg.

S. latifasciatus, Mcq. The Dowards. Four females, three on July 14th, 1900, and one on May 5th, 1901. These Doward insects have a black-haired scutellum, and the abdominal bands undulating and reaching the edge at their upper corners. Mr. Verrall's comment on them was, "Get a series, and if they all have black-haired scutella, I will distinguish them."

S. nitidicollis, Mg. An early species and fairly common.

S. corollæ, F.

S. *luniger, Mg.*

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S. bifasciatus, F. The commonest *Syrphus* in Spring and Early summer. Very fond of Pear blossom.

S. balteatus, Deg.

S. cinctellus, Ztt. Not as common in Herefordshire as the next species.

S. cinctus, Fln.

S. auricollis, Mg. The Var. *maculicornis* as common as the type.

S. euchromus, Kow. One male only of this scarce species, at Haughwood, May 25th, 1898.

S. triangulifer, Ztt. One female. Cusop Dingle, July 25th, 1900. Mr. Verrall's remark upon it was, "The fourth known British specimen."

S. punctulatus, Verr. Common at Westhide, less so at Woolhope and The Dowards; always in the spring.

S. guttatus, Fln. A pair of this great rarity. Woolhope; the male, June 22nd, 1903, and the female, July 16th, 1904. In both examples the two yellow spots at the back of the thorax, from which the insect gets its name, are present.

S. umbellatarum, F. From June to September, but far from common.

S. compositarum, Verr. Cusop Dingle, in August and September. Mr. Verrall, in "British Flies," gives Tarrington as a locality, probably from captures by Colonel Yerbury.

S. labiatarum, Verr. All my examples bear Woolhope localities on their labels, but the insect is probably much more widely distributed in the county than this.

S. lasiophthalmus, Ztt.

S. arcticus, Ztt. A male at Dorstone on a head of cow-parsnip, August 28th, 1897; and a female at Westhide May 30th, 1900. The narrow build and dark colouring of the male might easily lead to its being mistaken for one of the dark *Platychiri.*

S. barbifrons, Fln. Scarce. Westhide, and my own garden. A spring species.

Sphœrophoria scripta, L.

S. menthastri, L.

S. flavicauda, Ztt. I have not sufficiently studied these three most puzzling species to be able to say which of the several varieties, recognised by Mr. Verrall under each of them, are represented in Herefordshire.

Xanthogramma ornatum, Mg.

X. citrofasciatum, Deg. Both these species are scarce, the latter the most so. My localities for them are Woolhope, The Dowards, and as far north as Bodenham in the Home District.

Baccha obscuripennis, Mg.

B. elongata, F.

Sphegina clunipes, Fln. Always singly, and usually by stream sides in hilly districts. Woolhope, Dowards, Cusop Dingle.

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Ascia podagrica, *F.*

A. dispar, *Mg.* Common in all marshy places.

A. floralis, *Mg.* One female. Leech pool, Clifford, August 27th, 1902. In this specimen, the fore and middle femora are all black except at the knees and at the extreme base, the antennæ are black or very dark brown, without a trace of yellow underneath, and a broad yellow band crosses the base of the third abdominal segment.

Brachyopa bicolor, *Fln.* Woolhope, not uncommon.

Rhingia campestris, *Mg.* The male sometimes hovers in the air like an *Eristalis*.

Volucella bombylans, *L.*

V. inflata, *F.* Not uncommon in Woolhope District.

V. pellucens, *L.*

Eristalis sepulchralis, *L.* Fairly common on large pools, such as Devereux pool, the Leech pool, and the big pond at Westhide.

E. tenax, *L.*

E. intracarius, *L.*

E. arbustorum, *L.*

E. nemorum, *L.*

E. pertinax, *Scop.*

E. rupium, *F.* Cusop Dingle. Sparingly, in July and August.

E. horticolor, *Deg.*

Myiatropa florea, *L.*

Helophilus trivittatus, *F.* One female. Shobdon Marsh, July 13th, 1904.

H. hybridus, *Lw.* Widely distributed, but much less common than the next species.

H. pendulus, *L.*

H. versicolor, *L.*

H. transfugus, *L.* Devereux pool. Common, July and August.

H. lineatus, *F.* Do. Do.

Mallota cimbiciformis, *Fln.* Of this great variety a single example was taken at Westhide by Mr. Wainwright, of Birmingham, early in July, 1899. It is scarcely known as a British insect outside the New Forest.

Criorrhina ranunculi, *Pz.* More often seen than taken at sloe and hawthorn bloom in the spring. Scarce.

C. berberina, *F.*

C. oxyacanthæ, *Mg.*

C. floccosa, *Mg.* Scarce, or more probably overlooked from its resemblance to the preceding specimen.

C. asilica, *Fln.* Not uncommon in the Woolhope District, and probably elsewhere, but I have no records.

Brachypalpus bimaculatus, *Mcq.* Of this rarity, three have been taken in the Ledbury District, one by Mr. Wainwright and two by Colonel Yerbury; one of the latter with the label, "Wallhills, May 6th, 1899," being now in my collection. It has never fallen to my own net,

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but when collecting with Colonel Yerbury on the banks of the Wye at Bredwardine, May 29th, 1899, we saw what we had little doubt was this insect flying backwards and forwards before an opening high up in an old oak tree. We watched it for a long time, and though it came occasionally within reach of our nets, it was always too quick for us.

Xylota segnis, *L.*

X. lenta, *Mg.* Much less common than the preceding, though by no means rare in the Ledbury and Woolhope Districts.

X. sylvarum, *L.*

X florum, *F.* Mr. Verrall ("British Flies") gives Tarrington as a locality, probably on the strength of captures by Colonel Yerbury.

X. abiens, *W.* Widely distributed, and not uncommon. It frequents the stools of recently felled oaks, in company with the much commoner *X. segnis*.

Syritta pipiens, *L.*

Eumerus ornatus, *Mg.* Common in Herefordshire woods.

Chrysochlamys cuprea, *Scop.*

Arctophila mussitans, *F.* Occasionally in the Woolhope District, but more commonly on the west and north sides of the county.

Sericomyia borealis, *Fln.*

S. lappona, *L.* Both *Sericomyiæ* are scarce in the Woolhope and Ledbury Districts, but occur more frequently in the north and west.

Chrysotoxum cautum, *Harr.*

C. octomaculatum, *Curt.* Woolhope. Scarce.

C. elegans, *Lw.*

C. festivum, *L.*

C. bicinctum, *L.*

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EARDISLEY CHURCH.

In the south aisle, on the floor, is a stone slab 6 feet 3 inches long, by 3 feet 10 inches wide. It is jointed across near the centre, and may have been reduced in length when it was laid in its present position. Around the margin is the following incised inscription in Norman French letters.*

+ . EMUND : FYZ : IC (joint here) : GYST : I : CI : DEUS : DE : SA : ALME : (joint here) MERCY.

ARELEY KINGS CHURCH.

The inscription to the poet Layaman is incised on the lower circular base of font, extending only half way around, the rest being plain. See antea, pages 316, 317.

* Note there are double dots between the words on the Eardisley slab.

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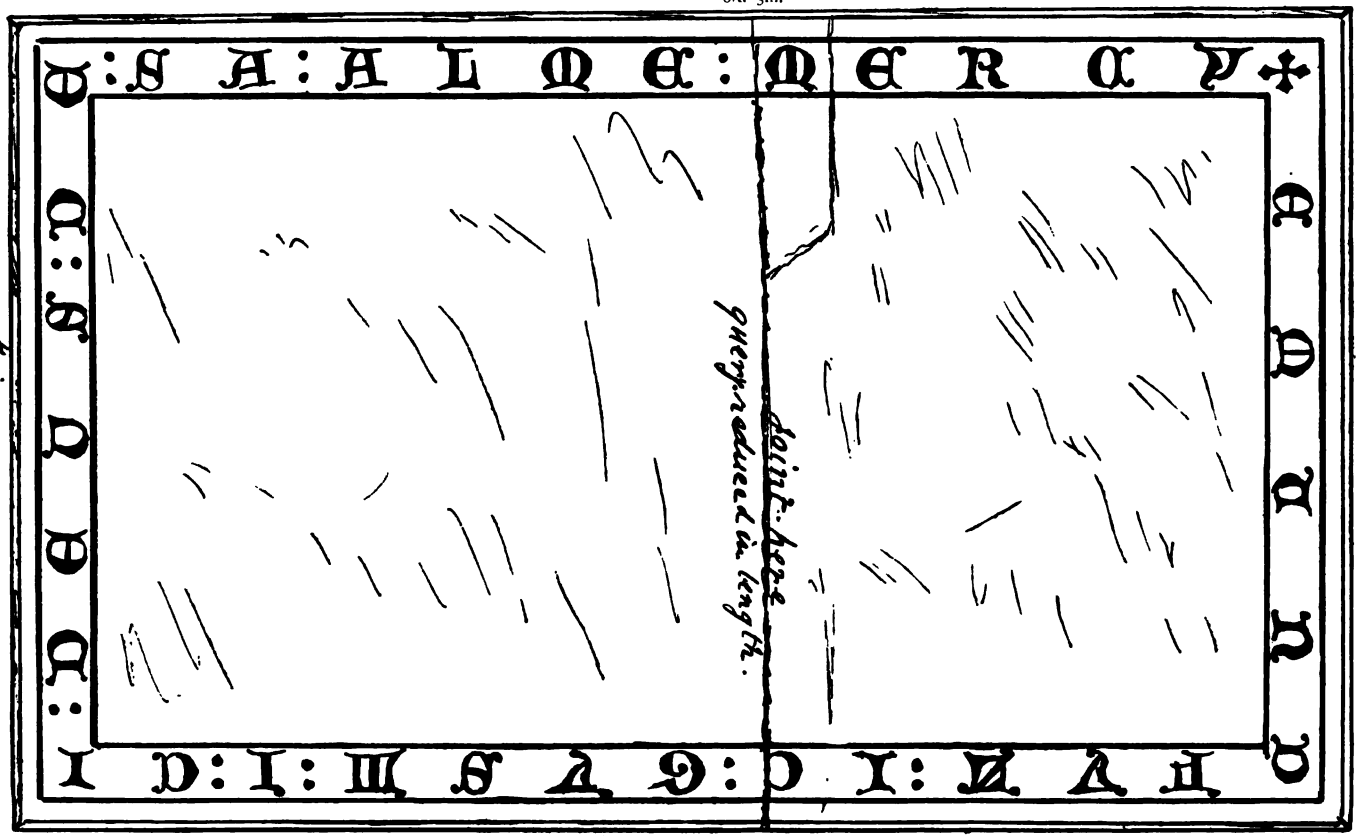

COFFIN SLAB, EARDISLEY CHURCH.

R. CLARKE. DEL.

✠ TEMPORE:LAYAMANNI:SANTI:

INSCRIPTION ON FONT TO LAYAMAN, ABELEY KINGS CHURCH.

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THE HEREFORD MIRACLES.

By the Rev. A. T. Bannister, M.A.

The miracles recorded in the "Lives" of the mediæval saints are, for the most part, vaguely described and poorly attested. We have very rarely indeed the testimony of actual eye-witnesses, written down within a short time of the alleged occurrence; and almost never have we the detailed record of the cross-questioning of these witnesses by skilled lawyers. The miracles said to have been wrought in Hereford, at the tomb of St. Thomas Cantilupe, are, therefore, of a special interest and value, since we have existing an official account—drawn up, in the fullest detail, by six trained lawyers [1] of the investigation into these miracles made by the Papal Commissioners appointed for this purpose.

In 1305 a petition was forwarded to Pope Clement V., asking that Bishop Cantilupe should be canonized. The petition was signed by King Edward I., by the Archbishop of York, by fifteen Bishops, seven Abbots, and eleven Earls, with many Barons and other nobles. The King wrote, in addition, a private letter to the Pope, urgently asking his favourable consideration for the petition. Clement thereupon appointed a Commission of inquiry into the life and miracles of Bishop Cantilupe, the Commissioners being the Bishops of London and Mende, together with William de Testa, the Papal Nuncio in England. After considerable delay, the Lords Commissioners held their first meeting on July 13th, 1307, in the Chapter-house of St. Paul's.

The inquiry in London does not concern us here, since it dealt with the life and character of Bishop Cantilupe, *insertis tamen aliquot miraculis*; in which miracles, however, the Commissioners do not seem to have placed much belief.[2] But on August 30th two of the Commissioners (the Papal Nuncio being detained on other business) reached Hereford, to investigate the miracles which were said to have been worked at the Bishop's tomb. They stayed in Hereford until November 16th, *omni die ex industria intuentes ecclesiam.* There in the North Transept, night and day, stood, knelt, or lay, the sick and infirm, the blind, the deaf, and the halt, "waiting to receive miraculously the benefit of health by the merits of St. Thomas." And all around were the offerings of those who had been cured, or perhaps of those who hoped for a cure (though, in most of the stories, they seem only to have vowed to make the offering, but to have deferred payment until

1 Quorum notariorum publicorum saltem duo . . . omnibus interfuerunt, et in scriptis redegerunt.

2 Some were little more than subjective visions of Richard Swinfield; others were the "stock" miracles attributed to every saint, the different witnesses assigning them to different times and places, *e.g.* the bones of the Bishop bled when they were on hostile ground; but one witness says the hostile ground was the Diocese of Canterbury, whose Archbishop had excommunicated the Saint, another makes it the domain of Gilbert de Clare, who had tried to encroach on the rights of the Bishopric.

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the Saint had performed his part of the bargain). The Commissioners made a careful inventory of these offerings as follows :—

170 ships in silver.
41 ships in wax.
129 images of men, or of their limbs, in silver.
1424 images of men, or of their limbs,[3] in wax.
77 figures of animals and birds of divers species.
108 crutches.
3 vehicles in wood.
1 vehicle in wax.
97 night-gowns.[4]
116 gold and silver rings and brooches.
38 garments of gold-thread and silk.

There were, in addition, many lances and arrows with which men had been wounded and miraculously cured, and some chains and anchors of ships. The amount of wax, made into candles, and offered at the tomb by pilgrims from all parts, was, say the Commissioners, enormous.[5] Further, the Commissioners state that out of the offerings in money at the tomb *fuerunt cathedralis ecclesia de duabus navibus ampliata, et fabricatum in parte maximum campanile.*

The Commissioners now proceeded to the examination of witnesses, beginning, on September 10th, with Bishop Swinfield himself. For their instructions were, first of all, to cross-question the Bishop, the Canons, and other officials of the Cathedral *si circa ipsa signa vel miracula fuissent per eos vel quoscumque alios ex quocumque ingenio aliqua conficta vel etiam machinata.* After careful inquiry, however, they found nothing *quod sinistram posset suspicionem inducere.* Next, they were instructed to question closely those who had been cured, and eye-witnesses of the cures, and, in especial, to find out *si incantationes vel superstitiones vel fraudes aliquæ intervenerunt.* They were to have absolute proof that the alleged infirmity was real and of long standing, and that the presumed blind, deaf, or lame person *non confinxisset aliquid propter mendicitatem vel quæstum.* They were also carefully to note *quo anno, mense, die, loco et quibus præsentibus dicta miracula facta sunt.*

The witnesses were examined in the Chapel of St. Catherine, adjoining the Cathedral. Many of these witnesses could speak *nec litteraliter* (i.e. *Latine*) *nec Gallice.* For their evidence, given in English, or Welsh, two sworn interpreters were employed. By November 12th the particulars of only seventeen miracles had been investigated, 115 witnesses to them having given evidence in fullest detail. As only one

3 Eyes and ears in wax were not counted, *prae multitudine eorundem.*

4 *Camisiæ permultorum miraculose (ut dicebatur) progenitorum ab iis qui liberos habere primo nequiverunt.*

5 We gather from the *Taxatio ecclesiastica* that in the year 1294, i.e., the seventh year after the miracles began to be worked, the surplus wax, after providing for the lights which were perpetually burning round the tomb, was worth £20.

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day now remained of the four months appointed by the Pope for the inquiry, the details of 204 miracles[6] which had been reduced to writing by the officials of the Cathedral, were simply read over, the Commissioners asking Bishop Swinfield and others, after each recital, to swear that they had investigated the case, and believed it to be genuine. As half a day still remained, 44 witnesses *fuerunt summarie recepti et examinati super duodecim miraculis.* Then the Commissioners had ended their long task, although they say, *plures alios testes ad alia miracula comprobanda habebat dictus Procurator in promptu.*

The seventeen miracles thus thoroughly investigated, which Pope John XXII. in the Bull of Canonization declares to be *fidelibus probata testimoniis*, are these which follow. I have added in brackets a few criticisms on the evidence, such as the *Advocatus Diaboli* might have made, had he been present at Hereford.

1. Agnes della Hulle, cured of paralysis of the right side, on the Friday in Whitweek, 1286.[7]

[Probably a case of hysteria. She had tried the Church at Leintwardine, where she had heard that cures were being performed, but the Rector had roughly sent her away. Her cure was strikingly gradual. After fifteen days and nights spent at the tomb there was no result; during the next fifteen days there was a steady improvement; then, for three months, she walked with two sticks, after which time she was perfectly well. The Cathedral officials, either disbelieving the miracle, or more probably, not wishing the "boom" to begin until they had translated the bones to the new tomb, did not proclaim this miracle, nor ring the bells.][8]

2. Edith Oldecriste, wife of a Hereford Citizen, cured of furious madness, on the Friday before Palm Sunday, 1287.

[The husband said that drink was the cause of the madness, *i.e.*, she was suffering from *delirium tremens*. He took her "to the Holy Cross of Hereford; and then *nescit de cujus clerici consilio* to the tomb of St. Thomas," where (the acute stage of the disease being presumably over)

6. These 204 miracles (which are described at length), are summarised thus:—

40	Raisings from the dead.
33	Restorings of sight to the blind.
38	*Erectiones contractorum.*
24	Healings of lame people.
9	Healings of paralytics.
3	Healings of deaf people.
7	Healings of dumb people.
10	Healings of insane people.
40	Healings of divers infirmities.

7 I have, for the sake of correct chronological perspective, placed first and second the miracles which come seventeenth and twelfth in the *Processus canonizationis.*

8 Every mediæval saint seems to have had a favourite method of cure. With St. Thomas of Canterbury it was the "Water of St. Thomas," (and, on one occasion at least, a fraudulent supply from a neighbouring pool, brought merely to soothe the sufferer, performed the desired cure). At Hereford, the recognised mode of appeal was "measuring to St. Thomas," using a thread with which a candle was made, to be offered at the tomb. Agnes della Hulle measured the tomb itself; but, in all other cases, it was the sufferer who was measured, sometimes the height being taken, sometimes the chest measurement, and, in one case, the distance from finger-tip to finger-tip when the arms were outstretched.

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she recovered her reason, but was left prostrate and ill, only living four months after her "cure." The bells were rung, and this miracle was solemnly proclaimed, for the new tomb was now ready, and the bones were to be translated in a few days.]

3. Joanna, a child 5 years old, recovered from death by drowning at Marden, on the Sunday before St. George's Day, 1292.

[As often, in cases of drowning, the witnesses differed hopelessly as to the time the child was in the water, and no real proof was offered that she was ever dead.]

4. John Drake, an infant 1½ years old, recovered from death by drowning, at Little Marcle, on Rogation Tuesday, 1304.

[A case very similar to the one above. The child was inspected by the Commissioners, who found the flesh round his eyes and nose still, after three years, *quasi viridem, croceo colore permixto!*]

5. William Lorimer, aged 2½ years, recovered from death by drowning, at New Radnor, on September 18th, 1305.

[The bystanders here seem to have had more common-sense than was usual on these occasions, for, after measuring the child, they took him into a house, and "trusting in St. Thomas" brought him round before a fire. The witnesses, as always, differ as to the time he was in the water, and equally as to how long it was before he came round.][9]

6. Nicholas, a boy of 10 years, recovered from death by drowning in the Wye, at How Caple, on May 26th, 1300.

[A case very similar to the one above. The boy was taken out of the water "with his teeth clenched" and "livid like lead"; but, being placed in a warm bed, he recovered "after the time in which a man could walk five miles." He was measured, of course, to St. Thomas. But the Commissioners further asked him whether he himself had called upon St. Thomas. He replied that he had opened his mouth to call upon God, but the water had entered and choked him; he could not remember whether the thought of St. Thomas or of any other Saint had occurred to him.]

7. Galfred Russell, a boy 1½ years old, had his head crushed in by the wheel of a loaded wagon, drawn by four oxen—the child's parents also being in the wagon—on the Thursday in Holy Week, 1304. Measured to St. Thomas, the boy recovered.

[This is a long and strange story, and it is difficult either to disbelieve it or to rationalize it. Only the father and mother saw the child after the accident. For, "fearing to be put in prison, and to have their oxen confiscated, if the case were made public," they hid the body;

9 The only measurements of time in use among the common people seem from the evidence to have been (a) the canonical hours, prime, vespers, &c., (b) "the time within which a man could walk a mile, two miles, a league," etc., (c) "first cock-crow," "second cock-crow," *ea hora qua gallinæ ascendunt perticam ad quiescendum de nocte, &c.*

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but, returning often to look at it, they at length measured it to St. Thomas. Whereupon the child revived, and in three days was well. His head did not bleed after being under the wheel but *fuit effectum tenue et oblongum, sicut res aliqua mollis, quæ fuisset oppressa, sed ipse testis manibus suis contractans ipsum caput, reduxit ipsum prout melius potuit ad formam priorem.* The child, then four years old, appeared before the Commissioners, who reported that his head was still oblong.]

8. Juliana Kock, of Eaton Bishop, cured of paralysis, on the Saturday before Easter, 1287.

[An undoubted case of hysteria. Brought to the tomb in a basket chair, and seeing the excited crowds (it was the second day after the bones had been translated to the North Transept), and "one Philip the harper" cured, *accensa ipsa, et ducta nescit quo fervore*, she got out of her chair, walked to the tomb, and made offering.]

9. Margaret, wife of Adam of Holmer, cured of paralysis, on Ascension Day, 1287.

[Another case of hysteria. For some weeks previously (*i.e.* from the time when she first heard of the miracles, which began in Holy Week of that year), St. Thomas regularly appeared to her in dreams, and seemed *annuere quod volebat juvare eam.* Being measured, &c., she was cured.]

10. John of Holme Lacy, cured of a tumour on his neck, on Easter Monday, 1287.

[One would almost suspect fraud on the part of the Cathedral authorities. Edith Oldecriste's case, some ten days before, had made a great stir, as one witness to this miracle testifies. Then came the translation of the bones, on Maundy Thursday, marked by several miracles not brought before the Commissioners. On the Saturday Juliana Kock was cured of paralysis, as mentioned above. On Easter Day several blind received their sight, and a lame woman walked. (These miracles also were not investigated). Next morning (Easter Monday) a great crowd assembled in the Cathedral; and there, before them all, the man was exhibited, having the tumour, said to be of ten years growth, on his neck. He placed his head *intra quoddam foramen lapideum*, and holding it there *tanto tempore quod potuisset dixisse ter orationem Dominicam cum Salutatione B. Mariæ*, he drew it out with the tumour gone. The bells were rung: they sang a solemn *Te Deum*: and then the whole crowd formed a procession singing *Benedictus Dominus Deus Israel.*]

11. A beggar boy, about 15 years old, dumb, and having no tongue, received a tongue, and speech in two languages, during the Summer of 1287, some six months being taken up by the growth of the tongue.

[Thomas Sandi, sub-bailiff of Hereford, testified that he had suspected fraud, and had the boy well whipped "near the Church of St. Nicholas."]

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12. Roger Peythenyn, 2½ years old, son of a servant in Conway Castle, fell into the dry moat, on to a hard rock, 22 feet, and was killed, September 6th, 1303. On the same day, while the Coroner's inquest was being held, a burgess thought of measuring the child to St. Thomas, and *quasi in ictu oculi* he revived and was restored to his mother, *hilaris et gaudens, absque aliqua lœsione corporis sui.*

[The witnesses to this, perhaps the best attested of the miracles, include the Lord of the Castle, burgesses of Conway present at the inquest, with many priests and soldiers. The two Coroners gave the most significant evidence, that, when they examined the body, they found *in maxilla sinistra magnum livorem,* but no other hurt. Stunned, but not killed, would be the modern verdict.]

13. On November 2nd, 1307, when the Commissioners were in the Chapel of St. Catherine, examining witnesses, twelve sailors arrived as pilgrims to the tomb. And they *tactis sacrosanctis Evangeliis* testified that, on the 3rd of October, they had been saved from shipwreck by vowing a silver ship to St. Thomas.

[The story reminds one of the question of Bion, who, when shown the votive offerings of those who had been saved from shipwreck, asked "Where is the record of those who were drowned in spite of their vows?"]

14. William ap Rees, of Swayneseye, was hanged by William de Braose, outside Swayneseye Castle, for taking part in a murderous riot, and was recovered, by the merits of St. Thomas, on the Monday after the feast of St. Martin, 1292.

[This was—as the evidence shows with quite sufficient clearness —a plan arranged to save the man's life, a plan in which Lady Mary, wife of William de Braose, herself took part, being sorry for the man. She arranged that, ostensibly for further punishment, the culprit's own relatives should carry out the hanging. Thus the men-at-arms on guard could not see *ubi nodus dictæ cordæ cursilis, cum qua fuit suspensus, applicaretur collo ipsuis Wilelmi.* (Trahern ap Howell, *quem suspenderunt carnifices dictæ villæ,* at the same time and place, was not saved). Lady Mary then begged the body from her husband, had it measured to St. Thomas, and the man revived. One of de Braose's men-at-arms, bore witness that, when, by her command, he brought the news of the recovery to Lady Mary, she rejoiced greatly, so that the witness *dixit ei quod gaudebat de malo: quia malum erat quod ita malus homo resuscitaretur.*]

15. Agnes de la Brok, of the parish of St. Martin, Hereford, cured of blindness, on the Friday after the octave of Easter, 1287.

[Her blindness would seem to have been the result of some nerve trouble, if it was not, as some of the replies seem to suggest,[10]

10. *e.g.* one witness says she was well-to-do, so there could have been no reason for her wishing to make money out of her blindness.

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imposture. Several witnesses deposed that she had not, in her blinded eyes, *vulnera, apostema, tumorem, maculam, vel ægritudinem, vel aliquam apparentem læsionem.*]

16. Christina Cray, of Withington, was hanged[11] at Hereford, and restored to life, on Whitsunday, 1294.

[Eleven prisoners were hanged in all, a quarter of a mile beyond St Martin's Church. On the way to the spot, her son and daughter took Christina Cray into the Church, to be measured to St. Thomas At the hour of vespers, *per consuetudinem civitatis Herefordiensis*, her friends were allowed to take away her body, which they removed on a bier to St. Martin's Church. Here they gave her some warm beer, and she revived. She stayed in the Church for three weeks, not daring to leave lest she should again be arrested. Then, as was allowed to prisoners who had taken sanctuary, she appeared cross in hand, before the Royal Justices, foreswore the kingdom, and departed to Ireland.]

17. Adam de Kylpek, 5 years old, and Roger, his brother, 4 years old, cured of blindness, in the Summer of 1287.

[A simple case of contagious ophthalmia, from which the children recovered. *Mali humores effluebant ex oculis, et aliquando claudebantur palpebræ dictorum oculorum: tunc ipsi oculi inflabantur, et putredine congregata in eis denuo palpebræ aperiebantur.*]

Such, in brief outline, is the evidence for the miracles which are probably better attested than those of any other mediæval saint. To deny the facts is, of course, impossible. But it does not seem difficult—accepting the very evidence which the Pope thought conclusive—to perceive that there is nothing supernatural or miraculous about any one of these 17 miracles. And we are justified in assuming that these were put forward first as the best attested out of the 221 on the list. One thing, in any case, is clear to all who care to study the *Processus Canonizationis*: viz,, that St. Thomas Cantilupe would never have worked miracles, had not his faithful chaplain, Richard Swinfield, been his successor in the Bishopric of Hereford.

11. The poor woman was imprisoned in Hereford Castle, tried, and condemned to death, because a strange pig had got among her herd; and when it had not been claimed for many weeks, she sold it with the rest.

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ERRATA ET ADDENDA.

Page 4, line 19, for 1868 read 1869.

Page 10, under the column headed *January*, for 32·75 read 3·275.

Page 65, fourth line from the bottom, for "may be" read "could (had the sequence been complete) have been."

Pp. 123, 3rd paragraph; 125, 2nd paragraph; and 146, eight lines from the bottom; for "Crug Hywel, Hywel's rock," read "Crug Hywel, Hywel's hillock, mound, or barrow."

Page 125, 12 lines from the bottom, for "Llangmynech" read "Llan-y-mynach."

Page 127—Footnote—for "The original name Caractacus" read "The original name Caratacus."

Page 146, in the heading, last column in the Table, for "1 inch to 1 foot" read "1 inch to 1 mile."

Page 147, 2nd line, for "southwards" read "south-west by west."

Page 305, last paragraph, for "Mand" read "Maud."

Pp. 316 and 317, for "Arley Kings" read "Areley Kings." See page 376.

Page 349, for "W. P. Phillamore" read "W. P. W. Phillimore."

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INDEX

OF THE

TRANSACTIONS OF THE WOOLHOPE CLUB.

FROM APRIL, 1902, TO DECEMBER, 31ST, 1904.

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Field Meetings

AND DATES OF ANNUAL MEETINGS FROM APRIL, 1902 TO DECEMBER 31ST, 1904.

1902.

	PAGE
For Annual Meeting on 3rd April, 1902, see page 285 of previous Volume.	
May 27th, Tuesday.—The Woolhope Valley	19
June 20th, Friday.—Longhope, Huntley, and Mitcheldean	36
July 24th, Thursday (Ladies' Day).—Herefordshire Beacon and Eastnor Castle	43
August 28th, Thursday.—Bredon Hill	51
December 15th, Monday.—Annual Winter Meeting for the election of President and Officers	82

1903.

March 31st, Tuesday.—Annual Early Meeting for fixing Dates and Places of Field Meetings	95
May 28th, Thursday.—Shucknall Hill, Westhide, Yarkhill, and Tarrington	107
June 11th, Thursday.—Crickhowell	123
July 23rd, Thursday (Ladies' Day).—Church Stretton	154
August 23th, Thursday.—Caerwent	166
December 15th, Tuesday.—Annual Winter Meeting for the election of President and Officers	203

1904.

April 7th, Thursday.—Annual Early Meeting for fixing Dates and Places of Field Meetings	221
May 31st, Tuesday.—Lyonshall for Offa's Dyke, Almeley, and Eardisley	230
June 28th, Tuesday.—Craswall Priory	267
July 21st, Thursday (Ladies' Day).—Tintern Abbey	288
August 25th, Thursday.—Wyre Forest	312
December 13th, Tuesday.—Annual Winter Meeting for the election of President and Officers	

Digitized by Google

List of Meetings.

1902, 1903, 1904.

(*Arranged Alphabetically.*)

	YEAR.	PAGE.
Beacon (Herefordshire) and Eastnor Castle	1902	43
Bredon Hill	1902	51
Caerwent	1903	166
Church Stretton...	1903	154
Craswall Priory	1904	267
Crickhowell	1903	123
Longhope, Huntley, and Mitcheldean	1902	36
Lyonshall for Offa's Dyke, Almeley and Eardisley	1904	230
Shucknall Hill, Westhide, Yarkhill, and Tarrington	1903	107
Tintern Abbey	1904	288
Woolhope Valley	1902	19
Wyre Forest	1904	312

Digitized by Google

CONTRIBUTORS OF PAPERS, NOTES, &c., APRIL 1902, TO DECEMBER 31ST, 1904.

	YEAR	PAGE
Aldis, T. S., Drift in the Wye Valley	1904	325
———, The Dry Valley at Wormelow Tump		335
Bannister, Rev. A. T., M A., The Herefordshire Domesday ...	1904	318
———, The Hereford Miracles		377
Baylis, Philip, M.A., LL.M., F.Z.S., H.M., Deputy Surveyor Royal Forest of Dean, Tintern Abbey	1904	294
Bevan, Rev. J. O., Report as Delegate to the British Association Meeting at Belfast	1902	83
———, Ditto ,, ,, ,, Southport	1903	204
———, Ditto ,, ,, ,, Cambridge	1904	348
Bickham, Spencer H., Remarks on the Morphology of the cup-shaped Terminal Flower of the Foxglove...	1902	49
———, On the find of Silene noctiflora in Worcestershire		69
———, Local Rainfall in 1903 at Six Stations in Herefordshire		215
Binstead, Rev. C. H., Records of Rare Mosses	1903	111
Blake, Wm., Record of Crayfish, and of Rare Birds in Herefordshire	1902	85
———, Occurrence of Rare Birds	1903	112
Blashill, Thomas, F.R.I.B.A., F.Z.S., The occurrence of the Mistletoe in Herefordshire upon the Plum and the Peach ...	1904	265
———, Report as Delegate to the Congress of Archæological Societies		348
Boycott, A. E., M.D., Mollusca, Rare find	1903	112
———, Testacella maugei in Hereford...	1904	339
Burn, A. G., Colonel, Plan of the Site of Almeley Castle	1904	235
Callaway, Charles, D.Sc., F.G.S., Longmyndian Inlier at Huntley	1902	38
Charles, J. A. H., Record of 29 Years' Rainfall at Caerswall, Much Marcle	1903	217
Clarke, Robert, Inscriptions on "The White Stone" at Withington	1903	108
———, Short Notes on Tarrington Church		110
———, Cleobury Mortimer Church	1904	315
———, Inscribed Stones at Eardisley and at Areley Kings		376
Cornewall, Rev. Sir George H., Bart., Presidential Address ...	1903	97
Davison, Charles, D.Sc., etc., British Earthquakes	1904	353
Evans, Rev. John Owen, Tretower Castle, Church, and Court ...	1903	127, 129, 130
Grindley, Rev. H. E., Notes on Ice-Action, and ancient Drainage Systems connected with the Wye Valley	1904	336
———, Record of Fossils at Old Weir, Stretton Sugwas		339
———, Boulders exhibiting Glacial action, presented to the Museum		351

Digitized by Google

Harington, Rev. Charles, Occurrence of Black Tern	1902	73
——— ——— ——— Notifications of Golden Oriole and Water Rail in Herefordshire	1904	351
Hutchinson, Thomas, The Cuckoo in the year 1902	1902	46
———————, The Wild Birds Protection Act in Herefordshire	1903	96
———————, Addition to List of Birds seen from Aylstone Hill, Hereford		112
———————, Ditto ,, ,, ,,	1904	339
Jones, Rev. A. G., Shucknall Hill	1903	117
———————, Yarkhill		120
Kempson, F. R., F R.I.B.A., Remarks on Lyonshall Church ...	1904	231
———————, ——— Almeley Church... ...		235, 239
———————, ——— Eardisley Church ...		241
Lambert, Rev. Preb. Wm. H., Westhide...	1903	113
Ley, Rev. Augustin, Notifications of Rare Mosses	1903	111
———————, Plants of Craig Cille (Llangattwg Quarries), Breconshire		149
———————, The late Rev. W. H. Purchas, Obituary of ...	1904	341
Lilwall, C. J., Craswall Priory and Manor	1904	272
———————, Craswall Church		279
———————, Excavations at Craswall Priory, Results of		346
——— ———, Stained Glass from Craswall Priory, presented to the Museum		351
Lloyd, James W., "Tengmalm's Owl" and "Little Owl"	1902	73
——— ———, Arctic Tern in Herefordshire	1903	147
———————, Occurrence of Rare Birds in Herefordshire ...		148
——— ———, Notes on Rowe Ditch	1904	243
——— ———, Herefordshire, Tokens of the 17th Century ...		340
Lloyd, John, The Manor of Craswell or Craswall	1904	275
McCann, Rev. P. J., Meteorological Observations at St. Michael's Priory, Belmont	1902	85
Marshall, George, The Discovery of a Columbarium in the Tower of Sarnesfield Church	1904	263
———————, Circular letter in support of Protection of the Excavations and Preservations of the Finds at Craswall ...		346
Marshall, H. J., Rare specimen of Oak Tree at Gayton Hall, Upton Bishop	1904	282
Martin, A. Trice, F.S.A., Explorations at Caerwent...	1903	172
Moore, H. Cecil, The Woolhope Valley. References to Geological Localities in the District	1902	19
———————, Notes on Herefordshire Beacon and Eastnor Castle		43
———————, Bredon Hill		51
———————, Report on the British Mycological Society at Hereford		75
———————, Rainfall in 1902, Weather, and Dustfall		85
———————, Notes on Shucknal Hill and Neighbourhood ...	1903	107
———————, Neighbourhood of Crickhowell		123

Digitized by Google

Moore, H. Cecil, Inscribed Stones and Ogham Inscriptions 127, 138, 151
———— ————, Church Stretton 1903 154
———— ————, Watling Street in Herefordshire 160
———— ————, Caerwent 172
———— ————, Rainfall in Herefordshire in 1903, Temperature and Dustfall 212
———— ————, Landslip on February 17th, 1904, near Putley Cockshoot 1904 228
———— ————, Lyonshall 230
———— ————, Offa's Dyke and Rowe Ditch 245
———— ————, ———— ————, Reply to Mr. Watkins. Courses of Offa's Dyke and Watt's Dyke 250
———— ————, Craswall Priory and Neighbourhood 267
———— ————, White-leaved Oak, &c. 282
———— ————, Wyre Forest 312
———— ———— ————, Drifts in Herefordshire and evidences of Glacial action 330
———— ———— ————, Scheme for recording Defensive Earthworks and Fortified Enclosures 349
———— ————, Boulders exhibiting Glacial action presented to Museum 351
———— ————, Rainfall in Herefordshire in 1904 357
Morgan, Rev. W. E. T., Llangwathan, near Cusop, Hay 1904 270
———— ———— ————, Place names in the neighbourhood of Hay 285
Pilley, James B., The Nutcracker in Herefordshire 1902 70
———— ————, Annual Report for 1902 ... ... 1903 95
———— ————, ,, ,, ,, 1903 ... ... 1904 221
———— ————, The Goshawk 361
Powell, Rev. T. P., Crickhowell Church, and Porth Mawr 1903 126
Rea, Carleton, M.A., B.C.L., Hon. Sec. British Mycological Society, Additions to British Fungi ... ... 1902 75 to 79
Reade, Mellard, C.E., F.G.S., Remarks on the Formation of the Woolhope Valley 1902 32
Richardson, L., F.G.S., The Results of Denudation as seen from Bredon Hill 1902 55
———— ———— ————, Notes on the Geology of Bredon Hill ... 62
———— ———— ————, The Banbury Stone on Bredon Hill ... 68
———— ———— ————, The Mesozoic Rocks around Chepstow ... 1903 178
Smith, Miss Annie Lorrain, Note on the Fungus, *Stilbum tomentosum* 1902 78
Southall, H., F. R. Met. Soc., Weather in Herefordshire during the 19th Century 1902 2
———— ———— ————, Rainfall over area of the Water Supply to Birmingham from Wales 15
———— ———— ————, Our English Summers 1903 208
———— ———— ————, Presidential Address 1904 222
———— ———— ————, Rainfall at Ross, comparison of Rainfall in 1903 and 1904 359
Sparrow, Alexander, Minerals presented by, to the Museum ... 1902 69

Digitized by Google

Warner, Rev. R. Hyett, Almeley Castle and Church 1904 235
———————, Eardisley and its Castle (for Addendum see page 287) 256
Watkins, Alfred, Offa's Dyke, The Gap in the Weobley District ... 1904 246
———————, Additional Notes on Pigeon Houses 264
Winterbourn, T. H., Model of the Leominster Ducking Stool, presented to the Museum 1904 351
Wood, James G., M.A., LL.B., F.S.A., F.G.S., &c., Traces of Offa's Dyke between Ross and Hereford 1902 29
———————————————————, Points of interest on the route by railway from Grange Court Junction to Chepstow; thence by main road to Caerwent 1903 166
———————————————————, Primary Roman Roads into Herefordshire and Monmouthshire, and the Crossings of Severn 185
———————————————————, The Ancient Harbours of Gwent Iscoed or South Monmouthshire, and the Roman Passage thence 191
———————————————————, The "Anthony Post" at Avonmouth 195
———————————————————, The Place-name of Caerwent 198
———————————————————, Notes on the Byletts at Pembridge, 1904 242
———————————————————, Notes on the Rowe Ditch in Radnor 244
———————————————————, Notes on Offa's Dyke, Watts' (or Wats') Dyke, and Grimsditch 253
———————————————————, Things to be observed between Ross and Chepstow by Railway Route ... 291
———————————————————, A Lady Chapel at Tintern Abbey (footnote) 295
———————————————————, A Short History of Tintern Abbey and the Lordship of Striguil 300
Wood, John H., M.B., The Diptera of Herefordshire. The Platypezidæ, Pipunculidæ, and Syrphidæ 363

Digitized by Google

General Index.

From April, 1902, to December 31, 1904.

PAGE.

Abbey, Tintern, References to 289
——————, by Philip Baylis ... ...294 to 299
——————, Lady Chapel at ... ... (See also footnote) 295
——————, by James G. Wood ... ...300 to 311
Addenda et Errata 384
Archæological Societies Congress, Report of Delegate 348
Archæology, Ancient Buried Roads in Herefordshire 164, 165
——————, Defensive Earthworks and Fortified Enclosures 221, 235
——————, ,, ,, Scheme for Recording 349
——————, Ancient Harbours of Gwent Iscoed (South Monmouthshire) and the Roman Passage thence ... ...191 to 197
——————, Antonine's Wall 252
——————, Arthur's Cave on the Great Doward 291
——————, Avonmouth, The "Antony Post," at 195
——————, "Banbury" or "Bambury" Stone on Bredon Hill ... 53, 68
——————, Beacon, Herefordshire, "Clutter's Cave," below Herefordshire Beacon, and the "Stone of Divination" 44
——————, "Brut-y-Tywysogion," References to 253
——————, Caerwent Exploration Committee 172
——————————, References to 176
——————————, *Venta Silurum* 166
——————————, Roman finds at 172
——————, Ceawlin and the Britons, Site of battle between 167
——————, Coins, Roman ... ... 133 (see also footnote) 173
——————, Dyke, Offa's, Clawdd Offa at Clouds, Mordiford... ...29, 30, 250
——————————, Traces of from Ross to Hereford 29
——————————, Its Southern extremity on the Severn 169
——————————, Near Titley Railway Station 230
——————————, At Lyonshall, 232; at Holme Marsh ... 232, 248
——————————, References to 245
——————————, The Gap in the Weobley District... ... 246 to 255
——————————, Devil's Dyke, Grim's Dyke, and other dykes 252, 255 (see also footnotes)
——————————, Bryn Offa, Clawdd Offa, Llwyn Offa, near Mold, Flintshire 251
——————————, Its objects 252
——————————, Northwards to Mold in Flintshire... 251

Digitized by Google

Archæology, Dyke, Offa's, Fine continuous length from Redbrook to Bigsweir 292
———————————, Rowe Ditch, 242, 243; in Radnorshire, 244; References 245, 246
———————————, Watts' or Wat's Dyke, from Oswestry to the estuary of the Dee 251, 255
————, Domesday—The Herefordshire Hundreds, Tenants, Castles, Borough of Hereford, and Sidelights on Herefordshire Life ... 318 to 325
————, Dragon at Mordiford 35
————, Fethanlea, Site of battle (Fretherne) A.D. 584 between Ceawlin and the Britons 167
————, Gellygaer, Excavations at 133
————, Inscribed Stones, "Valens," "Peregrinus," and others in Tretower and neighbourhood ... ... 127 to 129
———————————, At Caerwent, to a Commander of the 2nd Legion 173, 189
———————————, Catacus, Teserhacus, Victorinus ... 129, 134
———————————, Turpilian Stone in Glanusk Park 138, 141, 142
———————————, Ogham inscriptions 138 to 141 and 151 to 153
————, Iter Britanniarum (Antonini)... .. ... 132, 155, 163, 185
———————————, Parthey's edition 165, 194, 195
————, De situ Britanniæ by Richard of Cirencester 160, 161, 162, 190
————, Julian Road (so-called) near Tretower 131
————, Julian Street 136
————, Kenchester (Magna) Foundations of Eastern Gate exposed in 1896 164
————, Leintwardine (Bravonium) 187
————, Maenhir at Cwrt-y-gollen 124
————, Maenhirs and Stone-circles in the Usk Valley Zone 129
————, Richard of Cirencester 160, 162, 190, 194
————, Romano-British history in connection with the country of the Silures .. .. 127, 141, &c.
————, Roman pavement over the railway tunnel, Tintern to Brockweir 311
————, Roman Roads from Mitcheldean to Drybrook 40
———————————— Stretton Grandison to Gloucester by Newent 108
———————————— in Breconshire and neighbourhood 134, 135
———————————— Herefordshire and Shropshire ... ... 160 to 165
———————————, Julian (so-called) past and present authorities upon ... ... 131, 132, and footnote 189
————————————, further notes on 136
———————————, Lydney, Roman town at 167
———————————, Primary, into Herefordshire and Monmouthshire, and crossings of the River Severn ... ... 185 to 190
————————————, Sarn Helen .. ... 135 (footnote), 137, 186
————————————, Severn Mouth, near the 167, 171
————————————, Suggested course from Burghill *vid* Callow Pitch, Wormelow, and St. Weonards to Caerwent ... 164 (footnote) see also p. 190
———————————, Severn. Ancient Crossings of the River 189 to 197

Digitized by Google

Archæology, Roman Roads, Severn. Ancient Crossings of the River, see also 190
———————, Stretton Grandison—Cicutio or Circutio... ... 108
———————, Trajectus Augusti 170, 190, 194, 195
———————, Tumuli on the Longmynds. Church Stretton ... 156
———————, Wats' or Watts' Dyke. See Dyke *antea*.
———————, Watling Street, its derivation and general course ... ... 160, 185 to 190
——————— ——— in Herefordshire ... ... 160 to 165
——————— in Shropshire 161
———————, its General course from Dover through Canterbury to Wroxeter, thence South through Burghill and Hereford to Caerwent ... ...186 to 190
Botany, Botanical Papers published by the late Rev. W. H. Purchas ... 343
———, Brambles in Wyre Forest 314
———, British Mycological Society at Hereford... ... ... 75 to 79
———, Elementary Schools—Dangers of "Nature Study," Classes in the .. 97
———, Extinction of Ferns in the neighbourhood of Symonds' Yat... ... 97
———, Extinction of Plants 103
———, Flora of Herefordshire 341
———, Fungi new to Britain 79
———, Fungi in Herefordshire, List of 76
———, Foxglove with cup-shaped terminal flower 49
———, Nature, Study Classes, Dangers of 97
———, Plants of Craig Cille, Llangattwg, Breconshire... ... ... 149, 150
———, ——— at Mordiford 34
———, ——— Mr. Bickham's Garden at Underdown, Ledbury 105
———, ——— in Wyre Forest 314
———, Rare Plants on Shucknall Hill 111
———, Rare Plants of the Longmynds 154, 155
———, Rare Grass, Kœhleria Cristata on Shucknall Hill 111
———, Red Snow; Red Colourations produced by certain Plants 45
———, River Wye; importations of sluggish Water Plants into 102
———, Scleranthus perennis at Stanner Rock 284
———, Silene noctiflora in Worcestershire 69
———, Mosses, Bryum torquescens, B. repens, and others, on Shucknall Hill 111
———————, Rare Mosses, Bramble, and other Plants on Shucknall Hill 118
———, Trees, Backbury Hill, solitary Beech Tree, landmark on 33
———————, Box Tree, growing on top of a Larch near Crickhowell ... 124
———————, Conifers in the Arboretum, Eastnor Castle 46, 105
———————, Juniper Trees on the Ridge Way, Eastnor 45
———————, Juniper Tree in Wyre Forest 314
———————, Mistletoe-bearing Oak on the Ridge Way, Eastnor 45
———————, ——————— (two in Moccas), one on Bredwardine Hill, the other on Woodbury Hill 104
———————, Mistletoe in Herefordshire upon the Plum and Peach ... 265
———————, Oak Trees at Eardisley 240

Digitized by Google

Botany, Trees, Oak at Sufton Court, Mordiford 35
———— ————, Leafing in the Christmas Season 283
———— ————, Varieties of 283
———— ————, White-leaved at Tarrington, leafing in the Christmas season 284
———— ————, Near Craswall Priory, white-leaved, leafing in the Christmas Season 271, 283
———— ————, Near Tarrington, white-leaved, leafing in the Christmas season 284
———— ————, Gayton Hall, Upton Bishop, rare species 282
———— ————, Varieties of 283
———— ————, Pyrus minima, unique, at Llangattwg Quarries, Breconshire 150
———— ————, Vine, 72 feet in length, at Eastnor Castle 46
———— ————, Yew, on the Ridge Way, Eastnor 45
———— ————————, At Craswall Priory 271
———— ————————, Three, "The Three Shepherds," on Offa's Dyke, Rushock Hill 241
———— ————————, On Offa's Dyke, between Redbrook and Bigsweir ... 292
———— ————————, In Churchyards. Cusop, 269; Eardisley, 240; Westhide, 109, 116; Yarkhill, 110, 121.
British Association — Report of Delegate, Belfast, 83; Southport, 204; Cambridge, 347.
Camps—Almeley's "Twt" 235
————, Ethelbert's—Adam's Rocks 30
————, Bredon Hill 53
————, Gellygaer 133
————, Pen-y-gaer 133
————, Sudbrook, or Southbrook, near Caerwent 175
Canal, Kington, Leominster, and Stourport, disused, never completed ... 312
Caratacus, otherwise Caradog, Caratac, Caractacus ... 127 (footnote) 128
Castles, Almeley 235, 237
————, Caerwent, several within ten miles of 175
————, "The Castes," Yarkhill 121
————, Castle Ditch, Eastnor 46
————, Castle Collen,=Cwm? in Reynolds' map *Iter. Brit.* 135
————, "Castell Conscuit," or Southbrook, near Caerwent 193
————, Castle "Toot," Cleobury Mortimer 317
————, Chepstow 168
————, Cleobury Mortimer 317
————, Crickhowell 124
————, Cusop 269
————, The Domesday Castles of Herefordshire 321
————, Eardisley ... ... 256 to 262, 287, 376
————, Eastnor 45, 105
————, Hay 268
————, Lyonshall 231
————, Oldcastle—Two in Herefordshire, and one outside the boundary in Monmouthshire 234
————, Tretower, in Brecknockshire 129

Digitized by Google

Chapel, St. Tecla 170
———, Tintern Abbey Lady Chapel ... ... see also footnote 295
Charms and Superstitions 271
Churches, Almeley 237
————, St. Audoen (Owen) 170
———, Birches Church of England Mission Room 271
———, Caerwent 172
———, Cleobury Mortimer 315, 376
———, Craswall Priory ... ... 267, 271 to 273, 351
———, Chepstow 168
———, Craswall Church 267, 278, 279, 346
———, Crickhowell 126
———, Dixton Newton, site of an early College of St. Dubricius 291
———, Eardisley 240
———, Lancaut—formerly contained a leaden font 293
———, Lyonshall 231
———, Mathern (place of death of Teudric) 171, 192
———, Mitcheldean 40
———, Sarnesfield 263
———, Sudbrook, or Southbrook (Saxon-Norman) 193
———, Tarrington 110
———, Tintern parva 298
———, Tretower 131
———, Tidenham 168
———, Westhide 113
———, Yarkhill 120
Churches with detached Towers—Berkeley, and Westbury-on-Severn ... 166
Churchyards—Cockpit in 278
————, Ball-court or Fives-court in 278
————, Epitaphs, in Herefordshire 239
"Church Stretton"—Three Volumes 156
Cistercian Orders, dates of Homes of, in Great Britain 301
Cockshoot at Mordiford ... ... — 30, 34
Cockshoots (three other) Eastwards of that at Mordiford 228
Corresponding Societies, exchange list 345
Courts of the Marches, Dissolution of, in 1535 ... ... 146, 279
Court House, Almeley 235
Court, Tretower 130
Crick Manor House 171
Cross, Remains of, at Huntley, page 40; at Westhide 109, 116
Drainage by Severn Tunnel of the Valley around Caerwent 192
———, The Dry Valley at Wormelow Tump 335
———, Ancients Systems of, connected with the Wye Valley ... 336 to 338
Drifts—High Level and Low Level 330
Ducking Stool at Leominster 351

Digitized by Google

Dulas Brook—Boundary between Herefordshire and Brecknockshire, ... 281
Eardisley, The Upper House 240
Earthquakes in the British Isles 345, 353
——————————, Form of Record of Observations to be adopted 354
Earthworks, Ancient Defensive and Fortified Enclosures. Hints to Helpers 349
Entomology, Lepidoptera, Rare finds... 48
——————, Finds in Bredon Hill District, Worcestershire 69
——————, Dr. John H. Wood's Collection at Tarrington 110
——————, Wyre Forest 315
——————, Hawkmoth in Herefordshire 339
——————, Diptera of Herefordshire, The Platypezidæ, Pipunculidæ, and Syrphidæ ... ... 363 to 375
Epitaphs in Churchyards, Herefordshire 239
Errata et Addenda 384
Etymology, Balystum, tortuous windings (Blestium) 188, 292
——————, Batch Twt (see also Twts) 233
——————, Botontinus... 255
——————, Brant-dun (Brandon), Bravonium 187
——————, Bygan-ofer (Bicknor) 291
——————, Byletts at Pembridge 242
——————, Arcen, Austre clive (East Cliff), Austrehyll (Oyster Hill) ... 170
——————, Caerwent (and other places in the neighbourhood) ... 198 to 202
——————, Crackydonia 232
——————, Crug Hywel, page 123, see also Errata et Addenda 384
——————, Cyne-broc 168
——————, Dorter 296
——————, Eald-burh-tun 167, 168
——————, Ermine Street (footnote) 189
——————, Tref iridiouen, St. Audoen, Bettwallech, Lamecare, St. Tecla... 170
——————, Grims-dyke 255
——————, Gwaith-y-lleng, Sarn-y-lleng 185, 186
——————, Gwent, Went (land cleared from the forest) 198, 199
——————, Hereford, The Army's Way, Heol mawr (Holmer?) 188
——————, Hay, Place Names (about fifty) in the neighbourhood of ... 285
——————, Hope in Woolhope, Fownhope, Longhope, Hopesay (see footnote) 286
——————, Llandogo, Llan Oudocui 292
——————, Llan Tydiuc (Dixton Newton), site of an early College of St. Dubricius 291
——————, Llyn-celyn (Holly grove) 291
——————, Old Sufton, Marcle 294
——————, Pen-allt (The end of the wooded slope) 194, 198
——————, Pen-cerig-calch 123
——————, Pen-crug (Pennocrucium), Pembridge (footnote) 187
——————, Ræw-dic and Stan-ræw... 244
——————, Twyn-y-beddau (footnote)... 278

Digitized by Google

Etymology, Usk 137
———, Yarkhill 120
———, Twt, Twts, Toot 233, 234, 317
———, Ystraigyl, Striguil ... ... 169, 171, 190 to 201, 300 *et seq.*
Field Naturalists' Quarterly 221
Friends' Meeting House, Almeley. Two of them... 232
Geology, Backbury Hill, Woolhope Valley viewed from Adam's Rocks, St. Ethelbert's Camp .. .. 30 to 32
———, Beacon, Herefordshire 43, 44
—— ——, Bredon Hill. Results of Denudation, page 55. Notes on Geology of 62
———, Bredwardine, Drifts and evidence of Glacial Action... ... 327, 335
———, Chepstow, the Mesozoic Rocks around ... ...178 to 184
———' Church Stretton and Longmynds ... ...157 to 159
———, Diorite, near Bartestre Convent, at Lowe's Hill or Loose Hill ... 30
———, Drifts in Wye Valley, Herefordshire ... ...325 to 338
——, Dry River-Valley at Wormelow Tump 335
———, Euroclydon—"The Deep Cutting"—Passage beds between Old Red Sandstone and the Carboniferous Series 41
———, Glacial Action in Herefordshire, evidences of ... ...330 to 338
———, Hereford City, on an area of 900 acres of gravel 282
———, ———————, Geological Sections of in Curley's Map, 1868 ... 333
———, ——— ———, Gravel Pits in the neighbourhood 336
——, ———————. Peat in Widemarsh district 332
———, Herefordshire, Geology of 14 districts (see Flora of Herefordshire)... 85
———, Ice Age 325
———, Ice-scratched Boulders in Drifts in Herefordshire 339, 351
———, Lime, Calcite of, compared with Alabaster (sulphate of lime) ... 36
———, Minerals presented to the Museum 69
———, Littlehope and Scutterdine Quarries of Woolhope Limestone ... 28
———, Longmyndian Inlier at Huntley, near Longhope 37, 38
———, Longmynds ... ...154 to 159
———, Malvern Range 43
———, Mordiford, and the Fault at Pentaloe Brook 27, 28
———, New Red Sandstone, Rhætic and Lias Beds at Garden Cliff, Westbury-on-Severn 167
———, Old Red Sandstone Slabs between Longhope and Mitcheldean ... 40
———, Old Red Sandstone Conglomerate near Mitcheldean Road Station 42
———, Passage Beds between Old Red Sandstone and the Carboniferous Series... 41
———, Pen-cerig-calch, Millstone grit 125, 126, 143
———, Rivers, Development of, Consequent, Subsequent, and Obsequent Streams 57, 58, 59, 337
———, "Scenery of England, and the causes to which it is due," by Lord Avebury 31
———, Shucknall Hill 119
———, Sugar Loaf, Grey Grit overlying Quartz Conglomerate on its summit 126, 143

Digitized by Google

Geology, Travertine in Churches—Lyonshall, 231; Almeley, 238; Craswall Priory 273
———, Woolhope Elevation, causes of, by Mellard Reade 32
———, Woolhope district, First Geological Field Meeting of this Club on May 18th, 1852, Localities of Exposures, References, and Suggestions for Routes ... ... 19 to 28
———, Woolhope Limestone, 28; at Dursley Cross 37
———, Wye Valley, Drifts and evidences of Glacial Action... ... 325 to 338
———, Wyre Forest Coal Field 313
Gold, said to have been worked in Roman times at Ogofau 134
Heights—Abergavenny Neighbourhood 146, 147
———, Adams Rocks (738·6), ... 30
———, Beacons (Brecon 2907), 147; Herefordshire (1114), 44; Worcestershire (1395) 44
———, Breconshire—Crug Hywel (1481), Pen-cerig-calch (2301·5).. 123, 146, 147
———, Bredon Hill (977·6), ... 52
———, Hay Neighbourhood 280
———, Herefordshire—(greatest height 2306) 146, 147, 280
———, Longmynds Neighbourhood 155
———, Wyndcliff (700) 293
"Herefordshire," by the Rev. James Davies in the "Quarterly Review," permission for reproduction 84
Hereford Cathedral Archives—Saxon Record (footnote) 202
———, Geological Sections—Curley's Map, dated 1868, ... 333
Herefordshire Boundaries—Worcestershire, Shire Ditch, 43; Brecknockshire, 146, 281
Hereford Miracles... ... ... 377 to 383
Hereford (Nicholas), Translator of 1st edition Wycliffe's Bible... 35
Ichthyology, Deterioration of Salmon Fisheries on the Wye 102
———, Crayfish in a brook affluent into the Garron near Ross 85
Inscribed Stones at Eardisley Church and Areley King's Church 316, 317, 376
——— ——— ———, Withington (White Stone) 107
Itinerary—Grange Court to Chepstow, thence to Caerwent 166
———, Things to be observed between Ross and Chepstow 291
Landslip of February 17th, 1904 228
———, Wonder, A.D. 1571 (footnote) 228
Llewellyn III., 145 (footnote) 268
Library—Woolhope Club, 1902, p. 82; 1903, p. 206; 1904, p. 352
Malvern Chase 46
Manor, Crick 171
———, Craswall ... ... 273 to 277
Meteorology—Weather in Herefordshire during the 19th Century 2
———, Herefordshire a typical "West Midland" district 2
———, Herefordshire—Meteorological Observations for 85 years ... 2, 4
———, "Persistency of Type" 3
———, Orleton, near Tenbury, Meteorological Observations for 59 years 3
———, Rainfall, Deficiency during 16 years, 1887 to 1902 6

Digitized by Google

Meteorology, Variation, 1867 to 1897, in different Months 8
———, Rainfall at The Graig, Ross, 1859 to 1902... 10
———, Temperature at The Graig, Ross, 1861 to 1900 11
———, Rainfall at The Graig, Ross, compared with Rainfall in the districts of the Birmingham Water Supply, from the Elan Valley in Wales ... ... 15 to 18
———, Rainfall in 1902 at St. Michael's Priory, Belmont, below the average of 10 years 85
———, Rainfall in Herefordshire in 1902 86
———, Rainfall in the Kingdom and Ireland compared with 30 years, 1870 to 1899 .. .. 87, 88
———, Rainfall, Percentage of Average for 23 years, at about 100 stations 89
———, Rainfall, Percentage of Average for 10 years in South, East, and West districts compared 90
———, General Meteorological Observations respecting 1902, Temperature, Record Cold in May and July 91
———, British Weather in 1902 ... ... 92, 93
———, The Cornish Dustfall of January, 1902, ... 93
———, Rainfall, 5 years average, Church Stretton Hills... 154
———, Our English Summers ... . 208 to 211
———, Rainfall in Herefordshire in 1903 .. .. 212 to 220
———, Rainfall at Bryngwyn in 1903—Rainfall averages for eight decades 214, 215
———, Rainfall in Ledbury and Neighbourhood in 1903 216
———, Rainfall, 29 years at Caerswall, Much Marcle 217
———, Temperature in 1903. Highest Record Shade Temperature 120° 218
———, Dustfall of February, 1903, and Local Dustfall in December, 1903 219
———, Rainfall in 1903 at 22 Stations in Herefordshire. Table facing page 220
———, Rainfall in Herefordshire in 1904 357
———, ———————— Comparison 1903 and 1904 359
Mollusca, Helix ericetorum, common on Shucknall Hill 111
———, Testacella maugei in Hereford 339
Museum, Presentations to 69, 227, 332, 339, 351
Mosses—See Botany ... ...
Obelisk in Eastnor Park 45
Ordnance Survey Maps and Geological, Abergavenny and Crickhowell .. 143
———————————————, Bredon Hill District 74
———————————————, Beacon (Herefordshire) and Eastnor ... 49
———————————————, Caerwent 177
———————————————, Church Stretton 158, 159
———————————————, Craswall and Hay District 284
———————————————, Huntley, Longhope, and Mitcheldean 42
———————————————, Offa's Dyke, from Bridge Sollars and Byford 241
———————————————, Lyonshall to Knill Garraway 241

Digitized by Google

Ordnance Survey Maps and Geological, Rowe Ditch, Byletts, Pembridge to Milton's Cross 242
———————————————, Shucknall Hill, Tarrington, Yarkhill 112
———————————————, Tintern and Chepstow 290
———————————————, Woolhope and Mordiford District ... 34
———————————————, Around Woolhope (Geology) ... 21 to 27
———————————————, Wyre Forest 315
Ornithology, Act, the Wild Birds' Protection (County of Hereford) Order, 1904, dated June 3rd 96, 284, 355
————————, Birds seen from Aylstone Hill, Hereford, additions since 1898 339
————————, Bittern 227
————————, Cormorant... 85
————————, Cuckoo in 1902 46
————————, Curlew 271
————————, Goosanders... 85
————————, Goshawk 361
————————, Grebe, Great Crested, on the Wye near Backney Bridge ... 112
————————————, Eared, near Hereford 112
————————, Glossy Ibis (Liver)? 148, 149
————————, Nutcracker in Herefordshire 70
————————, Oriole (Golden) and Water Rail at Aymestrey 351
— — ————, Owl, Little, and Tengmalms 73
————————, Pomatorhine Skua 148
————————, Mealy Redpoll in Hereford, Lesser Redpoll at Kimbolton .. 112
———— ————, Rare Birds in Herefordshire 34
———— ————, Tern, Arctic 147
————————————→, Black 73
————————, Wyre Forest, Birds met with on August 25th, 1904 315
Records ... ... pp. 34, 73, 85, 112, 147, 148, 271, 339, 351
Owen Glyndwr ... ... 144 to 146, 231, 268, 269
Peat and Alluvial Deposits in Hereford 332, 336
Piers Plowman 316
Pigeon House discovered in Sarnesfield Church Tower 263
Pigeon Houses generally, Additional Notes on 264
Plague in Ross, 1637, at Yarkhill, 1644 225
"Pound" and "Stocks" at Huntley 40
Purchas, the late Rev. W. H., Obituary Notice 341
River Severn, the Ancient Crossings of ... ...189 to 197
Tarrington, Rev. J. Ralph, Vicar, aged 80, shot by the Parliamentarians, 1644 111
Tokens of Herefordshire, additions to since 1884 340
Tramway from Kington to Old Radnor 230
Trees—See Botany ... ...
Tumuli on the Longmynds 156
Wales, divided into Shires 146, 279
Wells, Moorals near Colwall, and Walms below Herefordshire Beacon... .. 45

Digitized by Google

Wells, Roman, in elevated Limestone at Caerwent, not drained by the Severn Tunnel 192
——, Holy, near Craswall Priory 271
Withington, The White Stone at 107
Wye, comparison of lowest summer level at Hay and at Hereford (footnote) 269
——, Limit of Spring Tides at Bigsweir 292
Wye Valley, Drifts and evidences of Glacial action (see also Geology) 325 to 338
Wyndcliff 288, 293
Wyre Forest 312

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